DEFENSE HIGHWAY NEEDS

[No. 86–19]

2

HEARINGS

BEFORE THE

SPECIAL SUBCOMMITTEE ON THE FEDERAL-AID HIGHWAY PROGRAM

OF THE

COMMITTEE ON PUBLIC WORKS
HOUSE OF REPRESENTATIVES

EIGHTY-SIXTH CONGRESS

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CONTENTS

Testimony of— Page

Besson, Maj. Gen. Frank S., Jr., Chief of Transportation, Army 303
Chacey, D. K., Assistant Chief of Transportation for Transportation Engineering, Department of the Army 3, 63, 87, 94, 207, 233, 281
Erickson, Eric L., Chief, Bridge Division, Office of Engineering, Bureau of Public Roads 93, 112, 207, 233
Germane, Dr. G. E., Director for Transportation Policy, Office of Assistant Secretary of Defense, Supply and Logistics 268
Hedlund, Col. E. C., Director of Transportation, Office of Deputy Chief of Staff, material, Department of the Air Force 270
Leonard, Armlon, president, Leonard Bros. Transfer, Miami, Fla., vice president, Heavy Specialized Carriers Conference, American Trucking Association, Inc., accompanied by J. E. Ozburn, vice president, sales and security, and Fred J. Dewhouse, vice president, traffic 31
McGuire, Perkins, Assistant Secretary of Defense (Supply and Logistics), Department of Defense 383
Pachler, Maj. Gen. F. T., Director of Operations and Acting Assistant Deputy Chief of Staff for Military Operations, Army 291
Schriever, Lt. Gen. B. A., commander, Air Research and Development Command, USAF 327
Siegle, Arthur G., Chief, Division of Defense Plans and Operations Bureau of Public Roads 112, 207, 233
Stevens, David H., president, American Association of State Highway Officials, and chairman, Maine State Highway Commission 158
Tallamy, Bertram D., Federal Highway Administration 347
Turner, Francis C., Deputy Commissioner and Chief Engineer, Bureau of Public Roads, Department of Commerce 359
Whilldin, Alex, Chief, Transportability Branch, office, Chief of Transportation, Department of the Army 190
York, Dr. Herbert, Director, Research and Engineering, Department of Defense 259

LIST OF EXHIBITS

1. Coordination of matters pertaining to highways for national defense, chart 9
2. Geometric design standards for the National System of Interstate and Defense Highways, comment No. 1, January 15, 1957, signed "Paul F. Yount, Major General, USA, Chief of Transportation" 16
2-A. Geometric design standards for the National System of Interstate and Defense Highways, February 7, 1957, signed "Chief, Bureau of Yards and Docks" 18
2-B. Geometric design standards for the National System of Interstate and Defense Highways, comment No. 2, April 8, 1957, signed J. H. Hinricks, Major General, USA, Deputy Chief of Ordnance," with enclosures 19
2-C. Highway clearance standards, April 5, 1957, signed "Earl C. Hedlund, Colonel, USAF" 20
3. Map showing rail clearance for T-43, T-48 tanks and items approximating 12 feet in width 27
4. Department of the Army, letter, October 1, 1957, signed "Paul F. Yount, Major General, USA, Chief of Transportation," to Hon. B. D. Tallamy, Federal Highway Administrator 28
5. Statement of Armlon Leonard, president, Leonard Bros. Transfer, Miami, Fla. (See appendix, p. 414.)

	Page
6. Highway clearance standards, March 18, 1958, signed "S. R. Browning, Major General, USA, Deputy Chief of Transportation"	65
7. Highway clearance standards, April 24, 1958, from Chief, Bureau of Supplies and Accounts	66
8. Highway clearance standards, April 30, 1958, signed "Raymond L. Winn, Brigadier General, USAF, Director of Transportation"	66
9. Highway clearance standards, May 1, 1958, signed "S. I. Tennyson, Assistant" (for the Chief of Ordnance), with enclosures, letter from Redstone Arsenal, April 18, 1958, signed "George A. Bickerton," and a measurement chart	68
10. Highway clearance standards, July 4, 1958, signed "F. T. Pachler, Brigadier General, GS"	70
11. Partial list of military equipment that requires an excess of 13 feet, 6 inches, vertical clearance for highway transportation	82
12. Not introduced in record, can be found in subcommittee files.	
13. Draft of proposed letter from General Besson to Bertram D. Tallamy, Federal Highway Administrator, re 17-foot clearance, unsigned	111
14. Vertical clearance for Interstate Highway System, June 23, 1958, signed "Arthur Siegle," to Paul F. Royster	115
15. Interstate System vertical bridge clearance, August 27, 1958, office memorandum from E. L. Erickson to A. G. Siegle with tabulation	116
16. Interstate System vertical bridge clearances, September 29, 1958, Bureau of Public Roads, office memorandum from E. L. Erickson to A. G. Siegle	119
17. Interstate System vertical clearances, February 6, 1959, Bureau of Public Roads, office memorandum from E. L. Erickson to A. G. Siegle	142
18. Interstate System verticle clearance requirements for movement of missiles, February 12, 1959, Bureau of Public Roads memorandum from Paul F. Royster to E. L. Armstrong	143
19. Military needs for additional vertical clearance, Interstate System, Bureau of Public Roads, notes of staff meeting	143
20. Interstate System vertical clearance requirements for movement of missiles, March 23, 1959, Bureau of Public Roads memorandum from Paul F. Royster to B. D. Tallamy	146
21. Estimated cost of increased underclearances on the Interstate System, March 31, 1959, Bureau of Public Roads memorandum from E. L. Erickson to A. G. Siegle	146
22. Interstate System vertical clearances, April 15, 1959, Bureau of Public Roads memorandum from A. G. Siegle to Paul F. Royster	148
23. Increased vertical clearance for the Interstate System, June 5, 1959, Bureau of Public Roads memorandum from A. G. Siegle to files	151
24. American Association of State Highway Officials, supplemental statement of R. R. Bartelsmeyer, president, May 18, 1959	162
25. American Association of State Highway Officials, letter, October 1959, signed A. E. Johnson, executive secretary, to B. D. Tallamy	166
26. Minnesota State Highway Commission, L. P. Zimmerman, commissioner, letter, December 30, 1959, sent to Senators Humphrey and McCarthy and Congressman Blatnik	178
26–A. Bureau of Public Roads, letter, January 5, 1960, to American Association of State Highway Officials	178
26–B. American Association of State Highway Officials, letter, January 5, 1960, in reference to letter of January 4, 1960, from B. D. Tallamy	179
26–C. American Association of State Highway Officials, telegram, January 8, 1960, to B. D. Tallamy, re above letters	180
27. American Association of State Highway Officials:	
Questionnaire to various State highway departments, January 21, 1960	182
Letter from A. E. Johnson, executive secretary to membership, December 30, 1959	183
27–A. Results of questionnaire by AASHO dated January 1, 1960	184
Addendum	188
28. Air Research and Development Command, letter, August 1, 1959, from B. A. Schriever, lieutenant general USAF, commander, to Maj. Gen. F. S. Besson, Jr., Army	210

Page

29. Memo from C. H. Perry, Acting Chief of Transportation, to Hon. Ellis L. Armstrong, Commissioner of Public Roads, dated August 11, 1959 ---- 210
30. Department of the Army letter, August 7, 1959, from Maj. Gen. F. S. Besson, Jr., to Hon. George H. Fallon ---- 211
31. Memo prepared by A. G. Siegle for Paul F. Royster, dated September 25, 1959 ---- 212
32. Letter, October 1, 1959, from Maj. Gen. F. S. Besson, Jr., to Hon. B. D. Tallamy ---- 216
33. Memo, October 5, 1959, from D. K. Chacey ---- 218
34. Chronological flow of the developments ---- 422
35. Memo, October 6, 1959, from E. L. Erickson to A. G. Siegle ---- 224
36. Memo, November 9, 1959, from A. G. Siegle to Paul F. Royster (will be found in subcommittee files).
37. Memo, October 27, 1959, from the Federal Highway Administrator to the Secretary of Commerce ---- 246
38. Letter, November 12, 1959, from the Secretary of Commerce to the Secretary of Defense ---- 247
39. Letter, December 7, 1959, to Maj. Gen. Frank S. Besson, Jr., re highway clearance standards ---- 274
40. Fact sheet, will be found in subcommittee files.
41. Letter from General Pachler to General Besson, December 15, 1959 ---- 303
41-A. Major General Besson, Jr., furnished information for the record, March 2, 1960 ---- 324
42. Letter, June 17, 1959, from Maj. Gen. F. S. Besson, Jr., to Lt. Gen. B. A. Schriever ---- 339
43. Memorandum, December 21, 1959, for Lt. Gen. B. A. Schriever ---- 341
44. Letter, December 23, 1959, from Lt. Gen. B. A. Schriever to Perkins McGuire ---- 343
45. Memo from John J. Allen, Jr., Under Secretary for Transportation, Department of Commerce, dated November 6, 1959, to B. D. Tallamy ---- 352
46. Letter, November 27, 1959, from Perkins McGuire to Secretary of Commerce ---- 353
47. Letter, December 3, 1959, from Secretary of Commerce to Thomas S. Gates, Jr., Secretary of Defense ---- 353
48. Letter, December 21, 1959, from Perkins McGuire, Assistant Secretary of Defense, to Frederick H. Mueller, Secretary of Commerce ---- 354
49. Letter, January 8, 1960, from B. D. Tallamy, Federal Highway Administrator, to Frederick H. Mueller, Secretary of Commerce, with enclosure ---- 355
50. Letter, January 25, 1960, from James H. Douglas, Deputy Assistant Secretary of Defense, to Frederick H. Mueller, Secretary of Commerce ---- 356
51. Memorandum, January 27, 1960, to the field from Mr. Armstrong ---- 382
52. Memorandum, November 18, 1959, from Brig. Gen. C. A. Randall, USMC, Office of the Secretary of Defense, for Perkins McGuire ---- 391
53. Dratt letter, December 14, 1959, to the Secretary of Commerce, re 17-foot height ---- 392

APPENDIXES

A. Letter, July 23, 1948, from R. H. Baldock, president, American Association of State Highway Officials to Hon. James V. Forrestal, Secretary of Defense ---- 413
B. Statement of Armlon Leonard, president, Leonard Bros. Transfer, Miami, Fla ---- 414
Exhibit A. Reports of problems created by overpasses on new highway construction, with attached letter ---- 417
Exhibit B. Irregular Router's Protest Relieves Bridge "Scalping," article from Irregular Common Carriers Conference ---- 419
Exhibit C. Estimated increase in number of overdimension permits issued by 14 States comparing 1955 with 1959 ---- 420
Number of permits issued for various categories of overdimension heights comparison, 1958 with 1959 ---- 421
C. Chronological flow of the developments, list from June 30, 1949, to October 5, 1959, Exhibit 34 ---- 422
D. Statement of Ralph E. Clark, chairman, Car Service Division, Association of American Railroads ---- 428

DEFENSE HIGHWAY NEEDS

TUESDAY, FEBRUARY 9, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to call, at 10:10 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommittee) presiding.

Present: Representatives Blatnik, Fallon, Smith, Clark, Edmondson, Johnson, Cook, Scherer, Baldwin, Schwengel, Robison, and Mumma.

Also present: Walter R. May, chief counsel; John P. Constandy, associate counsel; George H. Martin, administrative assistant; Sherman S. Willse, investigator; and Kathryn M. Keeney, clerk of subcommittee.

Mr. BLATNIK. We declare the public hearing of the Special Subcommittee of the House Committee on Public Works in session.

The Chair has an announcement to make to the committee members here. The first order of business to be called on the House floor is the conference report on our water pollution bill. We have an agreement from both sides that there will be no rollcall and if we have a quorum on the floor and there is an automatic rollcall we may dispose of the matter in 20 minutes. It will be important that all of the committee members be on the floor by 12.

So without objection, the Chair will recess these hearings at 11:45 and we will move up the afternoon hearing, which will commence at 1:45. That is when we will resume the afternoon hearings.

It is the wish of the Chair that we run through this portion of the hearing which involves quite a volume of detail but important detail, in order to lay the foundation and to document the foundation for the inquiries which we are going to make in the next 2 weeks. This raises a question also about the meeting time for tomorrow.

Mr. Scherer, will you explain the problem that some of the Members on your side have?

Mr. SCHERER. Some of our Members have Lincoln Day speeches to make and I was wondering whether or not we could not meet at an earlier hour tomorrow and run straight on through possibly to 1 or 1:30, and we will take as much testimony as if we were to meet at 10:15 and run to 12, and start at 2 and quit at 4. I suggest that because I would like to be present for all of the testimony.

Mr. BLATNIK. May I ask the chief counsel, who has the program with the witnesses who are already here, if the committee resumes

tomorrow at 9:30 and runs till approximately 1 to 1:30, or a little over that, can we complete the witnesses we have scheduled?

Mr. MAY. I think we can make sufficient progress, Mr. Chairman.

Mr. BLATNIK. Then if there is no objection it will be agreeable to the members of the committee and we will meet at 9:30 tomorrow morning, hoping to run through to 1 or 1:30 tomorrow afternoon.

We will now commence our hearings and hear the witnesses we have listed.

Before we do that, the Chair has a brief statement to read for the record.

To provide a proper perspective for this first series hearings by the Special Subcommittee on the Federal-Aid Highway Program of the House Committee on Public Works, it was felt this brief statement was necessary for the record.

One of the prime functions of the subcommittee is to ascertain the adequacy of the policies, practices, and procedures involved in the administration of the Federal-aid highway program, with particular emphasis on the National System of Interstate and Defense Highways for which the Government is underwriting 90 percent of the cost.

More than 3 years have elapsed since legislation was passed to bring this vast interstate highway network into being. The time for a serious evaluation of the development of the program is here.

World War II highlighted the deficiencies of our national highway system as an essential element of our defense posture.

Congress called for the creation of the National System of Interstate Highways in the Federal-aid Highway Act of 1944.

Section 2 of the Federal-Aid Highway Act of 1948 directed the Commissioner of Public Roads—

to invite the cooperation and suggestions of the Secretary of Defense and the National Security Resources Board as to their indicated or potential needs for improved highways for the national defense.

The Commissioner was directed to report on "current conditions and deficiencies."

The Commissioner's report declared in substance that "grossly inadequate" roads "had a perceptible effect in retardation of the war effort."

The Federal-Aid Highway Act of 1956 changed the name of the Interstate System to the National System of Interstate and Defense Highways "because of its primary importance to the national defense."

Title 23 of the United States Code spells out the intent of Congress in the following language:

It is hereby declared to be in the national interest to accelerate the construction of the Federal-aid highway systems, including the National System of Interstate and Defense Highways, since many of such highways, or portions thereof, are in fact inadequate to meet the needs of local and interstate commerce, for the national and civil defense.

The basic legislation specifies that the Interstate System—

shall be so located as to connect by routes, as direct as practicable, the principal metropolitan areas, cities, and industrial centers, to serve the national defense * * *

The law says further that the geometric and construction standards—

shall be adequate to accomodate the types and volumes of traffic for the year 1975.

It seems abundantly clear from the foregoing quotations of the law that the standards for the Interstate System must take into account military, as well as civilian, requirements.

We live in an era of fast-changing concepts.

Congress needs to know if the responsible agencies of the Government, both military and civilian, are properly coordinating their planning of this 41,000-mile network.

Congress needs to know if the approaches to present and future requirements are characterized by any shortsightedness in providing for conditions expected to prevail.

Congress needs to know if the Interstate System is being geared to an emphasis on mobility that transcends anything we have ever known in the past.

It is with this concept of the law and its application that we are concerned in this initial series of hearings, and we propose to explore some aspects of the current relationship of design standards to defense requirements.

Our first witness is Mr. D. K. Chacey. Mr. Chacey, will you take the witness stand?

Mr. Chacey is the Assistant Chief of Transportation for Transportation Engineering, Department of the Army.

Mr. Chacey, is that your correct title?

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY

Mr. CHACEY. Yes, sir.

Mr. BLATNIK. In your present official capacity?

Mr. CHACEY. Yes, sir.

Mr. BLATNIK. Mr. Chacey, for the record would you give us a brief introductory résumé, as an introduction to the members of the committee, of your technical background and official capacity in connection with highway work over the past few years, particularly your service in the Department of Defense in connection with highways.

Mr. CHACEY. I am a graduate of Ohio Northern University in civil engineering.

From about 1931 to 1942, I was employed with the Ohio Department of Highways. In that capacity I was assistant to the division engineer in such areas as construction right-of-way and traffic and safety.

Mr. SCHERER. Could you speak a little louder, please?

Mr. BLATNIK. Can you pull the microphone a little closer? We may hear better if you do.

Mr. SCHERER. What university was that?

Mr. CHACEY. Ohio Northern University.

Do you wish me to repeat, Mr. Scherer?

Mr. BLATNIK. You may continue, please.

Mr. CHACEY. In 1942 I volunteered and was integrated into the Army of the United States as a first lieutenant. Shortly after reporting to duty I was transferred to the Office of Chief of Transportation, Department of the Army, Washington, D.C., and served

in the Highway Transport Service Division during the remainder of the war.

At the conclusion of the war I took a year's leave of absence from the Department of Highways in response to a request of General Leavey to stay with the Transportation Corps. Upon the expiration of that year's leave of absence I decided to stay with the Department of Army and I have been with the Chief of Transportation, serving in the Highway Transport Service Division, as Special Assistant to the Chief of Transportation for Highways for National Defense, as Special Assistant for Transportation Engineering, and presently as Assistant Chief of Transportation for Transportation Engineering.

Do you wish me to cover further my activities in the Office, Chief of Transportation?

Mr. BLATNIK. That will be sufficient for introduction. You can cover more details as you progress with the orderly unfolding of the operations of your office. Our subcommittee chief counsel, Mr. Walter May. Will you proceed with the interrogation?

Mr. MAY. Mr. Chacey, you hold a rank in the Army Reserve at the present time?

Mr. CHACEY. I do. Yes, sir.

Mr. MAY. What rank is that?

Mr. CHACEY. Colonel.

Mr. MAY. Your present superior is who?

Mr. CHACEY. My immediate superior is Major General Lincoln. My overall superior is the Chief of Transportation, Major General Besson.

Mr. MAY. Could you briefly identify and describe the divisions in your own office and your responsibilities?

Mr. CHACEY. I have three divisions. One, the Transportability and Engineering Division. Did you want the responsibilities of these divisions, Mr. May?

Mr. MAY. Yes, please.

Mr. CHACEY. In this Division we are responsible for assisting the Chief of Transportation in administration of the Army segment of the Department of Defense engineering for transportability program. This is primarily providing consultant services in subjects pertaining to transportability. The transportation aspects of site selection. Related traffic engineering activities. Matters pertaining to the development of methodologies on transportation and techniques related to the development of efficient transportation.

Another Division is the Installation——

Mr. MAY. Mr. Chacey, just a moment.

Mr. CHACEY. Yes, sir.

Mr. MAY. In that transportability agency, one of the purposes of that agency is to make some attempt to hold down the designs of various pieces of military equipment so that those pieces of equipment may well be transported throughout our systems in this country—rail, water, and road. Is that true?

Mr. CHACEY. That is correct. As well as overseas.

Mr. MAY. That is true.

In connection with that attempt there are occasions when, due to military necessity, the pieces of equipment are developed, and those pieces cause some difficulty in motor transportation. Is that true?

Mr. CHACEY. That is correct.

Mr. MAY. Would you give us some examples of such pieces of equipment?

Mr. CHACEY. Well, one of the items that has given us some difficulty has been our tanks. Another general range of items includes some of the construction equipment of the Chief of Engineers—cranes, crushing, screening and washing units; concrete mixers and loaders, and such as that.

Mr. MAY. That might be sufficient at this time, Mr. Chacey.

That indicates, although the transportability agency attempts to hold down the size of the pieces of equipment, there are occasions when military necessity causes to come about the development of oversized pieces of equipment.

Mr. CHACEY. There are occasions when military operations requirements are overriding necessities.

Mr. MAY. Could you go on and speak of your other divisions?

Mr. CHACEY. The Installations Division. It is responsible for mobilization planning with respect to Transportation Corps installations; staff coordination of construction matters pertaining to Transportation Corps installations; maintenance and management of facilities at our Transportation Corps installations; safety, as it pertains to (1) our Transportation Corps installations and their activities; and (2) transportation for which the Chief of Transportation is responsible.

The third division, as presently constituted, is the Highways for National Defense Division. This division is responsible for assisting in the matters pertaining to highway system development to meet the needs of national defense; special defense utilization of public highways; access roads essential to our national defense installations and activities; replacement roads and maneuver road repairs and related activities.

Mr. MAY. It is with this division that we will be somewhat concerned during the remainder of the hearing.

How many personnel would be involved in that particular division?

Mr. CHACEY. The Highways for National Defense Division, today, at this time, has one officer and six civilians.

Mr. MAY. Are you entitled to have more than that?

Mr. CHACEY. We are authorized—at the present time we are authorized seven civilians.

Mr. MAY. How many engineers would be presently working in that division?

Mr. CHACEY. There are three—four. Excuse me. Four engineers.

Mr. MAY. You have four working now?

Mr. CHACEY. Four authorized and three working. One man just left us.

Mr. MAY. Has that been true for the past 3 years—three engineers?

Mr. CHACEY. Most of the time there has been a vacancy. It has been a different vacancy, however. Of the four authorized engineers we have only had three of them except for a period of a short time here for 2 to 3 months, I beleive is about as long as it was. From 2 to 3 months.

Mr. MAY. Mr. Chacey, would you briefly describe the difficulties encountered by the military during World War II when it came to the movement of men, supplies and equipment?

Mr. CHACEY. Well, of course, I am not completely informed of all the difficulties. I am certain of that. I do know, however, that we did have problems. We had problems with respect to interstate movements because of variations in size and weight limitations.

We also had difficulty from the standpoint of some of the oversized items. I recall the necessity to move airplane fuselages from the central part of the United States—I believe from the Kansas City area—down into Texas. We often experienced a situation in which, although we had planned to move some of these items by rail, we found that because of the urgency or other conditions it was necessary to move them by highway. The highway transport seemed to fill, as it appropriately does, the connecting link between other modes of transportation.

Mr. MAY. Do I understand that you had intended to move certain equipment via railroad, but due to the emergency it became necessary to move that equipment over the roads?

Mr. CHACEY. On some occasions that is correct. It is my understanding that the initial, the basic planning before World War II, was that we would use rail for a large amount of our overweight movements, particularly tanks, and that kind of thing.

I don't want to leave the impression that all of these were moved by highways, but there were occasions when in order to meet military necessity they had to be moved by highway.

Mr. MAY. Did you then find that excessive use of the roads caused some breakdown of the roads?

Mr. CHACEY. Well, it was a combination, in my judgment. The roads were used actually more extensively than some had anticipated they would be. I am sure of that. But, No. 2 was the fact that critical materials and manpower were such that maintenance was not continued at the normal rate so as to keep these highways that we had in their normal state of repair.

Mr. MAY. Following World War II, in July of 1948, the Department of Defense received a letter from the president of the American Association of State Highway Officials. Do you have that available, Mr. Chacey?

Mr. CHACEY. Yes, I do, sir.

Mr. MAY. Dated July 23, 1948. We won't read all of it, Mr. Chacey, but could you quote the last paragraph on page 1 of Mr. Baldock's letter?

Mr. SCHERER. This letter came from whom?

Mr. MAY. From R. H. Baldock.

Mr. SCHERER. To whom?

Mr. MAY. To Secretary of Defense James Forrestal.

Mr. CHACEY. This letter was at the direction of the executive committee of the American Association of State Highway Officials. In this paragraph that Mr. May requested I read it states, and I quote:

In the recent war there were frequent occasions for the movement of highway loads exceeding the design capacity of roads and bridges. Obviously this is a condition that should be avoided in any future emergency by timely planning and preparatory action. This will be accomplished only by effective liaison between the agencies responsible for the provision of highways, and the military authorities.

Mr. MAY. I would also quote the following paragraph, where Mr. Baldock says:

It is with a view to the establishment of such desirable liaison that this letter is written. The matter has been discussed fully with the Commissioner of Public Roads and he will receive a copy of this letter.

(Text of letter appears in appendix on p. 413.)

Thereafter, Mr. Chacey, did the Department of Defense establish a single liaison for all branches of the military service?

Mr. CHACEY. Yes, sir.

Mr. MAY. Who then became liaison?

Mr. CHACEY. The action that was taken was that Secretary Forrestal designated the Secretary of the Army to act for him in matters having to do with highway systems in the United States. The Secretary of the Army, the Honorable Kenneth C. Royall, addressed a letter on August 25, 1948, to Mr. Baldock, in which he stated:

The Chief of Transportation, Maj. Gen. F. A. Heileman, will be the official representative of the National Military Establishment in liaison with the Commissioner of the Bureau of Public Roads and the American Association of State Highway Officials.

Mr. MAY. Thereafter, in July of 1953, Army Regulations No. 55–80 set forth certain significant data. I wonder if you might quote section 4(a) of those regulations?

Mr. CHACEY. I might add that this is the Army number for a joint Army, Navy, Air Force regulation. It states that the, and I quote, under paragraph 4, "Responsibility," subparagraph (a):

Under responsibilities and authorities delegated by the Secretary of Defense and the Secretary of the Army, the Chief of Transportation, Department of the Army, is the official representative of the Department of Defense in liaison with the Bureau of Public Roads, the American Association of State Highway Officials, and other civilian organizations concerned with highways, and will take the necessary action leading to integrating the foreseen highway needs of the Department of Defense into the highway programs of the United States, and, when appropriate, its possessions and territories.

Mr. MAY. So the responsibility was then delegated to the Chief of Transportation of the Army. I will quote from the Department of Defense directive No. 4500.22, dated October 18, 1955, concerning the subject "Highways for National Defense Responsibility." This restates the Army's responsibilities and declares in section V(a):

The Assistant Secretary of Defense, Supply and Logistics, shall be responsible for providing necessary guidance and assistance to the Department of the Army in carrying out the functions hereinafter assigned.

The directive then goes on to state:

The Department of the Army is responsible for:
Coordinating the defense transportation interest in public highways, and integrating the foreseen highway needs and operational requirements of the Department of Defense into the highway programs of the United States, its territories and possessions.

And now I quote section V(b)4, which declares that the Army is responsible for, and I quote:

Certifying for the Secretary of Defense to the appropriate Government agency as being important to the national defense the public highway needs of the Department of Defense, and, when appropriate, the needs of other Federal

agencies when unanimous agreement exists among the three military departments as to priority of construction and importance to the national defense.

Mr. Chacey, do these Army regulations and the Department of Defense directive give to the Chief of Transportation's Office the responsibility and the duty to report and to integrate the highway needs of the Department of Defense into the Federal highway systems?

Mr. CHACEY. Yes, they did.

Mr. MAY. Do you have with you a chart showing how the Chief of Transportation's Office might carry out its responsibilities?

Mr. CHACEY. You are referring to the large chart?

Mr. MAY. Yes. If you would just briefly produce that chart and explain to the subcommittee how the Chief of Transportation's Office carries out its responsibilities, it might be helpful.

Mr. CHACEY. This is a chart that was prepared and has been used in briefings to illustrate the position of the Chief of Transportation with respect to the other Federal agencies.

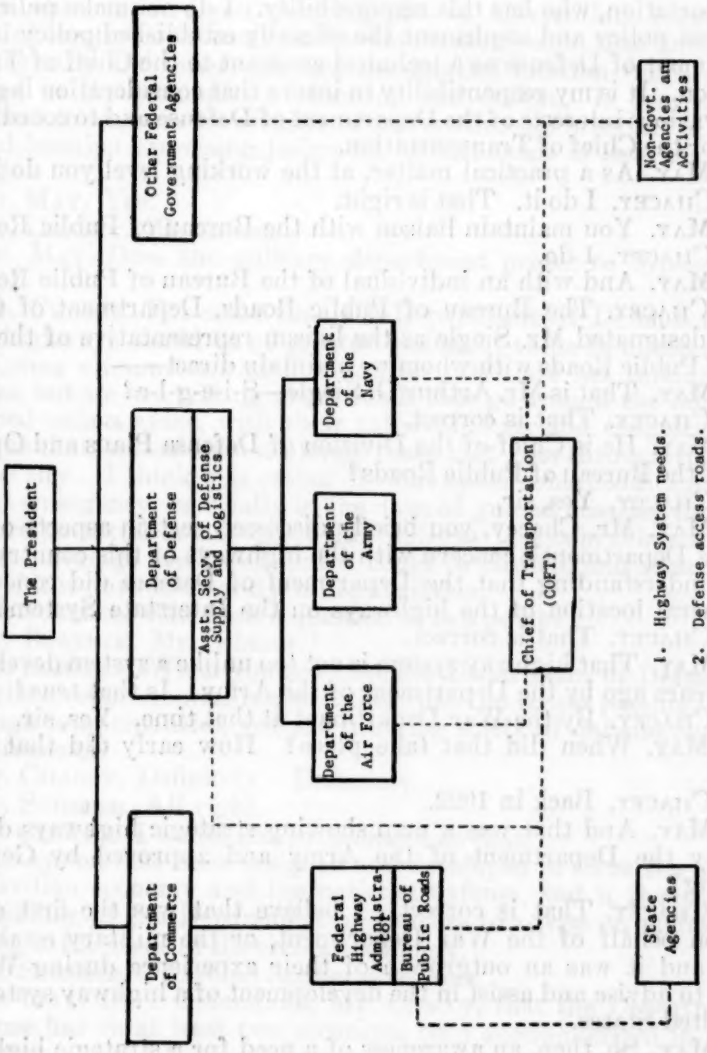
From the Secretary of Defense the responsibility has been delegated for policy matters to the Assistant Secretary of Defense, Supply and Logistics, to the Department of the Army, and in turn the Chief of Transportation, as we reviewed in the regulations, they (Chief of Transportation) having the responsibility to maintain official liaison with the Department of the Air Force, the Department of the Navy, and other governmental agencies, the Bureau of Public Roads, the Federal Highway Administrator, and through them (Bureau of Public Roads) to the Department of Commerce, and through the Federal Bureau of Public Roads to the various State agencies, and also the various nongovernmental agencies. One, the highway system needs pertaining to highways, the needs for defense access roads, and special defense utilization of public highways.

Mr. BLATNIK. The chart will be printed as exhibit 1 at this point in the hearings. Without objection, it is so ordered.

(The chart referred to is as follows:)

EXHIBIT 1

COORDINATION OF MATTERS PERTAINING TO HIGHWAYS FOR NATIONAL DEFENSE



Mr. MAY. Mr. Chacey, as a practical matter, although this responsibility lies with the Chief of Transportation, the one person who has the responsibility and duty to carry out and integrate the needs of the Department of Defense into the Federal highway systems is actually Mr. D. K. Chacey. Is that true?

Mr. CHACEY. My official responsibilities are to assist the Chief of Transportation, who has this responsibility. I do not make policy. I carry out policy and implement the officially established policy in the Department of Defense as a technical assistant to the Chief of Transportation. It is my responsibility to insure that consideration is given to the various interests of the Department of Defense and to coordinate them for the Chief of Transportation.

Mr. MAY. As a practical matter, at the working level you do it?

Mr. CHACEY. I do it. That is right.

Mr. MAY. You maintain liaison with the Bureau of Public Roads?

Mr. CHACEY. I do.

Mr. MAY. And with an individual of the Bureau of Public Roads?

Mr. CHACEY. The Bureau of Public Roads, Department of Commerce, designated Mr. Siegle as the liaison representative of the Bureau of Public Roads with whom we maintain direct——

Mr. MAY. That is Mr. Arthur G. Siegle—S-i-e-g-l-e?

Mr. CHACEY. That is correct.

Mr. MAY. He is Chief of the Division of Defense Plans and Operations of the Bureau of Public Roads?

Mr. CHACEY. Yes, sir.

Mr. MAY. Mr. Chacey, you briefly discussed certain aspects of the Defense Department's concern with the highways of this country. Is it my understanding that the Department of Defense did concur in the general location of the highways on the Interstate System?

Mr. CHACEY. That is correct.

Mr. MAY. That highway system is not too unlike a system developed many years ago by the Department of the Army. Is that true?

Mr. CHACEY. By the War Department at that time. Yes, sir.

Mr. MAY. When did that take place? How early did that take place?

Mr. CHACEY. Back in 1922.

Mr. MAY. And that was a map showing strategic highways developed by the Department of the Army and approved by General Pershing?

Mr. CHACEY. That is correct. I believe that was the first effort made on behalf of the War Department, or the military establishments, and it was an outgrowth of their experience during World War I, to advise and assist in the development of a highway system in the United States.

Mr. MAY. So, then, an awareness of a need for a strategic highway network is not new?

Mr. CHACEY. No, sir.

Mr. MAY. Did General Pershing's map differ greatly from the present system as it has been proposed?

Mr. CHACEY. General Pershing's map was prepared to advise and assist what is now the Federal Bureau of Public Roads in the designation of the Federal-aid primary highway system. It included by priority, routes totaling some approximately 56,000 miles. This was

a straight-line map, and there is a definite relationship between many of the routes identified on that map and many of the routes that have been identified as part of the Interstate System.

Mr. MAY. Regarding the specific alinement of the highways and their exact location, does the Department of Defense take any position with relation to such alinements?

Mr. CHACEY. Are you thinking of—we differentiate between the general location of a route on the Interstate System that serves areas strategically and otherwise, and the detailed location which gets involved in the economics of location and design. Is your question directed to learn as to whether or not we become involved in the detailed location exercising judgment on economics in location and design?

Mr. MAY. Yes.

Mr. CHACEY. We do not.

Mr. MAY. Does the military department prefer to bypass urban areas?

Mr. CHACEY. For some time the Department of Defense has felt that highways would be of greatest potential value in urban areas if they were circumferential in character. We are not talking about circles, but we are talking about roads that go around the highly developed urban areas, with their tall buildings, and congestion, and such as that, rather than a plunge route that goes through the center of the city. I think it is rather obvious under some conditions of national emergency, especially in the days of guided missiles, that there is more potential in the use of this highway if it is in suburban areas where buildings are lower, and it could be cleared, and such as that, than if it is downtown and it is not available.

Mr. SCHERER. Can I ask a question at this point?

Mr. BLATNIK. Mr. Scherer.

Mr. SCHERER. When you say that the Department of Defense prefers the circumferential routes rather than the routes passing directly through municipalities, you are thinking solely of defense needs and requirements?

Mr. CHACEY. Definitely. Definitely.

Mr. SCHERER. All right.

Mr. CHACEY. I would like to comment on that.

This system has been designed and developed to serve the needs of the civilian economy and the national defense, and it is not the responsibility of the Department of Defense to advise on matters pertaining to the needs of the civilian economy.

Mr. SCHERER. I have no further questions.

Mr. MAY. Do I understand, Mr. Chacey, that the Department of Defense has on at least two occasions been accommodated in the development of the National System of Interstate and Defense Highways? I am thinking now of certain mileage included in the specific recommendations of the Secretary of War.

Mr. CHACEY. Yes, sir. When the system was initially designated the then Commissioner of Public Roads requested the Secretary of War to review some of his recommendations and proposals. As a result of that review the Secretary of War recommended or suggested the inclusion of certain routes, which in turn were added to the Interstate System.

Mr. MAY. Do I understand that that amounted to 2,250 miles?

Mr. CHACEY. I don't know the exact mileage. It is a very rough estimate—something in the vicinity of 2,000 miles.

Mr. SCHERER. May I ask another question?

Mr. BLATNIK. Mr. Scherer.

Mr. SCHERER. Has the Department of Defense ever testified before this committee, or before any subcommittee, as to its desire that the Interstate System circumvent the cities rather than pass through them? Is there any testimony to that effect any place?

Mr. CHACEY. Yes, sir. That is a matter of record in House Document 249, and in testimony that has been presented several times. This is a subject that has been discussed before this committee on several occasions, and referred to in official testimony by Department of Defense representatives.

Mr. SCHERER. Generally, has not the Department of Defense testified that highways designed to meet civilian needs would meet military requirements? Has that not been the basis of much testimony?

Mr. CHACEY. In general. In general that is true. And as we work these problems and study these needs, both from the civilian standpoint and the industrial standpoint and the defense standpoint, we find that they are in very close alinement. There is this one area that I think we have tried to explain, without opposing what it was felt by the civil authorities was needed for them, that point being simply that the routes circumferential in character will get us around these highly concentrated areas and we can exercise better control over our movements, and there will be better availability of those routes under some conditions of national emergency.

Mr. MAY. Is it true that the design of structures, Mr. Chacey, on the Interstate System, was improved to accommodate the military?

Mr. CHACEY. Well, let me say this: In working with the Bureau of Public Roads in carrying out our liaison responsibilities, we studied many configurations of vehicles with a view to trying to accommodate, on highways designed to meet the needs for efficient movement of our commercial vehicles, a vehicle that would move our equipment on the same highways.

In this analysis, particularly with regard to bridges, it became evident that for certain short-span bridges they were not as capable of hauling the Army-type load—which is a concentrated type load. These bridges in certain short spans were not adequate to accommodate those as well as bridges of a shorter or a longer span. Now, there was a weak place in the range of bridge standards and—what they did was simply change their standards so as to knock this weak peak off of the curve as it is developed.

Mr. MAY. Mr. Chacey, we will take cognizance of the fact that the Federal-aid Highway Act of 1956 was approved on June 29, 1956, and it called for the completion of a National System of Interstate and Defense Highways, and in section 108(i) of the act it declares, and I quote:

> The geometric and construction standards to be adopted for the Interstate System shall be those approved by the Secretary of Commerce in cooperation with the State highway departments. Such standards shall be adequate to accommodate the types and volumes of traffic forecast for the year 1975.

Mr. Chacey, what is mean by geometric and construction standards?

Mr. CHACEY. Well, there are two principal areas of standards. One is the construction or—I would interpret it structural standards; and the other, the geometric, is the functional standard. One provides for the functional efficiency of the system and the other provides for the structural adequacy of the system.

Mr. MAY. On July 12, 1956, the American Association of State Highway Officials approved the standards and on July 17, 1956, they were adopted by the Secretary of Commerce. In relation to bridges and structures, the standards state, and I quote:

Clear height of structures shall be not less than 14 feet over the entire roadway width, including the usable width of shoulders. Allowance should be made for any contemplated resurfacing.

Mr. Chacey, prior to the approval and adoption of the standards, were you consulted?

Mr. CHACEY. I don't recall being consulted specifically with regard to this particular action. I think I should add, however, that with respect to this particular item the Department of Defense was on record as to its requirements in this area.

Mr. SCHERER. What was that requirement?

Mr. CHACEY. In this House Document 249, the Secretary of Defense's report of 1949, we had stated that to meet the military requirements, a vertical clearance to accommodate a vehicle with 12½ feet would meet the needs of national defense.

Mr. MUMMA. Vertical.

Mr. CHACEY. In other words, we were trying to keep our military vehicles to a vertical clearance of 12½ feet. This is an important consideration in this overall problem, so that they would be transportable in overseas areas. In some areas we had more restricted vertical clearances, such as that in foreign areas, than we had in the United States, and the pressure was to keep these vertical clearances down.

Mr. SCHERER. Do I understand you to say now that when the standards were adopted as a result of the passage of the 1956 Highway Act, which became effective on July 12, 1956, that the Department of Defense was not consulted specifically with reference to height clearances?

Mr. CHACEY. There was no exchange of communications and no specific and official exchange with——

Mr. SCHERER. Was there discussion with the proper persons in the Bureau of Public Roads at that time?

Mr. CHACEY. That question is pretty hard to answer. Mr. Siegle and I discussed these things on the telephone a lot. And to say that he and I did or did not specifically discuss this, during the period of a few months there, I am not certain that we did or didn't.

Mr. SCHERER. The only thing of record at the time of the adoption of the standards, however, was this House document in which the Department of Defense indicated 12½ feet was sufficient?

Mr. CHACEY. And our 1955 testimony of the Department of Defense, in which we indicated that except for overriding military necessity our objective was to keep our vehicles within a 12½ foot vertical clearance.

Mr. SCHERER. And that 1955 testimony was taken in connection with the hearings on the 1956 act that was eventually passed?

Mr. CHACEY. That is correct.

Mr. SCHERER. So you were on record that 12½ feet as late as 1955 was satisfactory?

Mr. CHACEY. That is correct.

Mr. SCHERER. After the adoption of this act, in 1957, some time around October 15, you again advised the Bureau of Public Roads that 14 feet was sufficient to meet your needs, did you not?

Mr. CHACEY. That is right, sir.

Mr. SCHERER. That was after the geometric standards were adopted?

Mr. CHACEY. That is correct.

Mr. FALLON. Will the gentleman yield?

Mr. SCHERER. Yes.

Mr. FALLON. Mr. Chacey, what is the general vertical clearance overseas?

Mr. CHACEY. It varies considerably. Actually there are some areas in which we could not expect to move some of our equipment. On the other hand, it varies terrifically. Our experience has been that if we can stay within 11 feet for most of our equipment, letting overriding military necessity get us up to 12½ feet, we can have fairly good mobility—reasonably good mobility. When we get above that area we come to—it is not a case of good or not good, but a case of requiring longer detours and going roundabout, and more time to get there. That is the equation in this whole problem.

It is not a case of where you can or cannot go, but it is a case of whether you can get there in time.

Mr. MUMMA. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Mumma.

Mr. MUMMA. What is the clearance on that Autobahn that Hitler built—the prize roads of Germany?

Mr. CHACEY. If my memory serves me right, I think it is 14 feet—I think it is 14.8.

Mr. MUMMA. Thank you.

Mr. ROBISON. Before we leave this point, Mr. Chairman, could the witness tie down and perhaps tie into the record the date of the testimony given on House Document 249?

Mr. BLATNIK. An attempt will be made to identify more specifically House Document 249, to which reference has been made. House Document 249——

Mr. CHACEY. 81st Congress, first session.

Mr. BLATNIK. Is the 81st Congress, first session, entitled "Highway Needs of National Defense." It is a message from the President of the United States transmitting the letter from the Administrator of the Federal Works Agency enclosing a report of the highway needs of the national defense. The particular testimony in the document to which we refer is on page 113, entitled "Appendix 3 of the Report of the Secretary of Defense on Highways for the National Defense to the Commissioner of Public Roads," dated March 11, 1949.

Mr. SCHERER. So that it will be abundantly clear, I do understand you just testified that as late as 1955, when we were having hearings on the 1956 act, or what eventually became the 1956 act, the Department of Defense confirmed its decision as set forth in this case in the document which the Chairman just read, namely, that 12½ to 14 feet was sufficient?

Mr. CHACEY. I think that the testimony will reveal that in 1955 the Department of Defense stated that highways designed to meet the needs of efficient commercial highway transportation will meet the needs of national defense.

Mr. SCHERER. That is what I asked you about.

Mr. CHACEY. And also referring to this House Document 249.

Mr. SCHERER. That is what I asked you before. As I remember the testimony of the Defense Department in 1955 it was to the effect that whatever will meet the civilian needs will meet the military requirements.

Mr. CHACEY. That is correct.

Mr. SCHERER. I have nothing further.

Mr. BLATNIK. Mr. May.

Mr. MAY. Mr. Chacey, no formal approval was asked of or given by the Department of Defense prior to the adoption of the standards in 1956. Is that true?

Mr. CHACEY. That is correct.

Mr. MAY. Were you invited to the meeting of the AASHO—the American Association of State Highway Officials—at which they approved the standards?

Mr. CHACEY. No, sir.

Mr. MAY. After the standards were adopted in July of 1956, did the Chief of Transportation's Office take some action thereon in relation to the problem?

Mr. CHACEY. Yes, sir. In the review of these standards there were two areas we were somewhat concerned with. One was the vertical clearance provision and the other was the exceptions, or the interpretation that could have been placed on the requirements for control of access. In view of this the Chief of Transportation, who was then General Yount—after that I might add that upon receipt of the standards for the Interstate System I discussed this informally or on the telephone with Mr. Siegle and I think I raised the question that these two areas should be reviewed by our military people to insure that they were adequate for the future needs for movement of military items of equipment. As a result of that, General Yount did write to the various military agencies.

Mr. SCHERER. When was this?

Mr. CHACEY. This was actually the letter written after some of this informal discussion and coordination which was dated January 15, 1957.

Mr. SCHERER. Is that after the adoption of the standards by the Bureau of Public Roads and AASHO to which you say you had made no formal recommendations?

Mr. CHASEY. That is correct.

Mr. MAY. Had you known beforehand, Mr. Chacey, the vertical clearance standard would be 14 feet?

Mr. CHACEY. Sir?

Mr. MAY. Had you known beforehand, before the standards were adopted, that the vertical clearance standards would be 14 feet?

Mr. CHACEY. No; I do not recall that I had any way of knowing what the standards were going to be.

Mr. SCHERER. Pardon me. You were not prejudiced by that fact, were you, that you did not know that the standard for vertical clearance was going to be 14 feet. As I understand it, subsequently about

a year later, the Army, Navy, and the Air Force all agreed in a memorandum that 14 feet was sufficient to meet present needs of the Department of Defense and the needs in the foreseeable future.

Mr. CHACEY. That is correct.

Mr. SCHERER. So the fact that you were not asked to participate, the fact that the Defense Department did not render a specific report in reference to vertical clearances did not prejudice the Department of Defense in view of your subsequent surveys and subsequent reports; am I correct?

Mr. CHACEY. I think that is correct.

Mr. MAY. Mrs. Keeney, will you present this letter to Mr. Chacey?

Is that a copy of a letter sent out on January 15, 1957 by Gen. Paul F. Yount?

Mr. CHACEY. Yes, sir.

Mr. MAY. I request we make that an exhibit, also, Mr. Chairman.

Mr. BLATNIK. Without objection, so ordered.

(Exhibit 2 follows:)

EXHIBIT 2

DISPOSITION FORM

Fre Re.: TCATE (ROSI No. 7(e).
Ts: COFORD.
Subject: Geometric Design Standards for the National System of Interstate and Defense Highways
From: GOFT.
Date: January 15, 1957.
Comment No. 1: Mr. Chacey/fdb/53976.

1. In accordance with paragraph 4, JARAF Regulations, AR 55–80, the Chief of Transportation, Department of the Army, is responsible for taking necessary action leading to integrating the foreseen highway needs of the Department of Defense into the highway programs of the United States.

2. Attached is a copy of section 8, "Size and Weight Characteristics and Movement of Military Vehicles," from Appendix III—Report of the Secretary of Defense on Highways for the National Defense to the Commissioner of Public Roads, March 11, 1949, included in House Document No. 249, 81st Congress, 1st session. These indicated requirements represent the latest official geometric design guidance furnished the Bureau of Public Roads, Department of Commerce.

3. Based on this guidance, Department of Defense testimony before congressional committees, and other traffic needs, the Bureau of Public Roads and the American Association of State Highway Officials (AASHO) developed geometric design standards for the National System of Interstate and Defense Highways (copy attached). These standards were adopted by AASHO on 12 July 1956 and were approved by the Bureau of Public Roads, Department of Commerce, on July 17, 1956.

4. The Federal-Aid Highway Act of 1956 authorized a 13-year program for the construction of the Interstate System. Subject to periodic review, attached AASHO standards will govern the design of this 41,000-mile system of highways. Although the standards are believed to be satisfactory to accommodate the military vehicles and material in current use, it is suggested that they be reviewed to insure all possible consideration of the future needs for highways to serve the national defense.

5. The primary purpose of this request is to insure that the minimum vertical clearance of 14 feet for bridges and underpasses which might restrict the transporting of defense material such as missiles is brought to the attention of all concerned. In this connection it is important that it be recognized that any appreciable increase in the vertical clearance of all structures on the Interstate System to provide a clearance in excess of 14 feet would considerably increase the cost of constructing highways on this system. In addition, it would appear that if an increase in the vertical clearance of overpasses on the National System of Interstate and Defense Highways is required the same standards should be

applied to the 235,000-mile Federal-aid primary system to insure flexibility in highway transport movements.

6. It is requested that the attached AASHO standards be reviewed and that comments and recommendations on any deficiencies believed to exist in them be furnished by 15 February 1957. Clear justification should accompany any recommended change, as a basis for further negotiations with the Bureau of Public Roads.

7. For further explanation and technical assistance, contact Mr. Chacey, Extension 53976.

PAUL F. YOUNT,
Major General, USA,
Chief of Transportation.

Mr. MAY. Mr. Chacey, do you have a copy there?

I would like you to quote paragraph 5 of that letter which sets forth the purpose.

Mr. CHACEY. Paragraph 5 of General Yount's letter dated January 15, 1957 stated—and I quote:

The primary purpose of this request is to insure that the minimum vertical clearance of 14 feet for bridges and underpasses which might restrict the transporting of defense material such as missiles is brought to the attention of all concerned. In this connection, it is important that it be recognized that any appreciable increase in the vertical clearance of all structures on the Interstate System to provide a clearance in excess of 14 feet would considerably increase the cost of constructing highways on this system.

In addition, it would appear that if an increase in the vertical clearance of overpasses on the National System of Interstate and Defense Highways is required, the same standards should be applied to the 235,000-mile Federal-aid primary system to insure flexibility in highway transport movements.

Mr. MAY. So some 6 months after the standards were adopted, the Chief of Transportation did take some action in relation to those standards by forwarding this letter.

Who received this letter, Mr. Chacey?

Mr. CHACEY. Chief of Engineers, Department of Army; Chief of Ordnance, Department of Army; Deputy Chief of Staff for Operations, Department of Army; the Department of the Navy; and the Department of the Air Force.

I guess our letter to Deputy Chief of Staff for Operations was after we received the recommendation from the other people. It was a later date, May 7.

Mr. MAY. You have available to you, Mr. Chacey, I believe, a chronology which you drew up. Would you relate to the subcommittee the answers that were returned in answer to this particular letter?

Mr. CHACEY. I have a very brief summary here of the replies, I mean the statistics. I also have this chronology.

Mr. MAY. The basis of your chronology, would you run through that; February 7, 1957, you heard from the Navy?

Mr. CHACEY. Navy reported no objection to the 14-foot clearance.

Mr. MAY. What did the Navy say? Mr. Chacey, I will quote from a copy of the letter and you tell me if it is correct. Navy said that the standards have been reviewed and are considered to be compatible with the Navy motor vehicle design standards for the present and foreseeable future for such motor vehicle transport application as would be required in all probability to use Interstate and Defense Highway Systems. Is that true?

Mr. CHACEY. That is correct.

(Exhibit 2–A follows:)

EXHIBIT 2–A

DEPARTMENT OF THE NAVY,
BUREAU OF YARDS AND DOCKS,
Washington 25, D.C., 7 February 1957.
M–321/eh
N2

From: Chief, Bureau of Yards and Docks.
To: Office of the Chief of Transportation, Department of the Army, Washington 25, D.C.
Subj.: Geometric Design Standards for the National Systems of Interstate and Defense Highways.
Ref: (a) OCT ltr TCATE (RCSI #7(c)) of 15 Jan. 1957.
(b) American Association of State Highway Officials Geometric Design Standards for National System of Interstate and Defense Highways, adopted 12 July 1956.

1. Reference (a) requested that this office review and comment on the subject AASHO standards set forth in reference (b), relative to their application to existing and future Navy motor vehicle design standards.

2. The subject AASHO standards have been reviewed and are considered to be compatible in all respects with the Navy motor vehicle design standards for the present and foreseeable future for such motor vehicle transport applications as would be required in all probability to use Interstate and Defense Highway Systems.

(S) *Chief, Bureau of Yards and Docks.*

Mr. MAY. We might note there that the Navy in answer to that letter seemed to limit its answer to motor vehicle design standards and does not seem to be speaking of some other equipment that the Navy might possess or might wish to transport. Is that true?

Mr. CHACEY. Yes, sir; I think that is true and I think that was the subject of some telephone discussion with the Navy people to insure that this did represent the official position of the Department of Navy with respect to the request that they had received.

Mr. MAY. Did you speak with Mr. Brown at that time?

Mr. CHACEY. I think Captain Benson was our liaison man at the Navy at that time.

Mr. MAY. Do you recall who signed the letters that you received from the Navy, Mr. Chacey? It was the Chief of the Bureau of Yards and Docks but we do not have the name.

Mr. CHACEY. Chief, Bureau of Yards and Docks, signed by N. L. Martinson.

Mr. MAY. How do you spell it?

Mr. CHACEY. M-a-r-t-i-n-s-o-n.

Mr. MAY. Does it give his rank?

Mr. CHACEY. No, sir.

Mr. MAY. That occurred on February 7. Did you hear from Army Ballistic Missile Agency——

Mr. SCHERER. As the result of your verbal conversations with the Navy, the following receipt of the letter in which it stated that 14 feet was sufficient, you were then satisfied that 14-foot clearance met all of the requirements of the Navy?

Mr. CHACEY. That is correct.

Mr. SCHERER. All right.

Mr. MAY. When did you hear from the Army Ballistic Missile Agency?

Mr. CHACEY. February 25, 1957. Wait a minute—the Army Ballistics Agency of course replied to the Chief of Ordnance and not directly to us.

I have this chronology "On February 25, 1957, the Army Ballistic Missile Agency reported that a missile container when loaded on a semitrailer had a vertical dimension of 13 feet, 11 inches." It was indicated, however, it was planned to reduce dimensions, and on April of 1957, the Chief of Ordnance of the Army stated "The minimum vertical clearance of 14 feet is adequate."

Mr. MAY. So Army Ballistic Missile Agency reported to the Chief of Ordnance that he in turn sent a reply to you?

Mr. CHACEY. That is correct.

Mr. MAY. And they said although they did have at that time a piece of equipment 13 feet, 11 inches, there was some hope of reducing that?

Mr. CHACEY. That is correct.

(Exhibits 2–B and 2–C follow:)

EXHIBIT 2–B

ORDGX–T
00/7UI 2021
TCATE (RCSI #7(c))

Subject: Geometric Design Standards for the National System of Interstate and Defense Highways

To: C of T
From: C of ORD
Date: 8 Apr. 57. Comment No. 2

1. The American Association of State Highway Officials standards outlined in the inclosures with Comment No. 1 have been reviewed and they are considered sufficient and adequate for the normal movement of Ordnance equipment in present and anticipated use. The minimum vertical clearance of 14 feet is adequate.

2. Comments from the various commodity commands do indicate the possibility of isolated equipment that, should movement over public highway become necessary, special permits would be required.

(S) J. H. HINRICKS,
Major General, USA,
Deputy Chief of Ordnance.

4 Incls
w/d 2 Incls. 1 & 2
added 4 Incls.
3. 1st Ind fm Vehicle Br.,
R & D Divi, OTAC, 27 Feb 57
4. Ltr, OWC, 21 Feb 57
5. Ltr, Redstone Ars, 21 Feb 57
6. Ltr, ABMA, 25 Feb 57

U.S. ARMY ORDNANCE CORPS,
ARMY BALLISTIC MISSILE AGENCY,
Huntsville, Ala., 25 February 1957.

In Reply Refer to: ORDAB–HT 451.
Subject: Geometric design standards for the National System of Interstate and Defense Highways.
To: Chief of Ordnance,
Department of the Army,
Washington, D.C.
Attn: ORDGK–T

1. Reference letter 6 February 1957, subject as above, outlining the highway design standards which have been adopted by AASHO and approved by the Bureau of Public Roads, Department of Commerce.

2. The AASHO standards are reviewed, and the following comments are furnished:

a. The present Redstone Missile System contains vehicles with the following maximum dimensions:

Crane, Mobile, 25 Ton (CE)
Width: 10'0"
Axle Lead: 31,410 lbs.
Gross Wt: 77,000 lbs.
Semitrailer, Auxiliary, 12 Ton, M269, 4W
Width: 10'0"
Container, Thrust Unit (As Semi-trailer)
Height: 13'11"
Trailer, LOK, 9 Ton, 2 Wheel (CE)
Axle Lead: 18,620 lbs.
Container, Thrust Unit, while towed as a Semitrailer by M52 Tractor
Length: 61'1"

b. Future plans for the system provide maximum dimensions as follows: width, not to exceed 10'0"; height, not to exceed 14'0"; length, not to exceed 90'0" (special combinations); axle load, not to exceed 18,000 pounds; and gross weight, not to exceed 60,000 pounds.

3. It is believed that the added emphasis now being placed on air transportability will result in further reduction of weights and dimensions of many vehicles.

For the Commander:

O. E. ADAMSON, *Major, AGC, Adjutant.*

EXHIBIT 2-C

DEPARTMENT OF THE AIR FORCE,
HEADQUARTERS UNITED STATES AIR FORCE,
Washington 25, D.C., 5 April 57.

Memorandum for Chief of Transportation, Department of the Army.
Subject: Highway Clearance Standards.

1. Reference is made to our memorandum to you on this same subject dated 14 February 1957.

2. The Commander of the Air Research and Development Command has reviewed the geometric design standards for the National System of Interstate and Defense Highways and has agreed that the standards are adequate for the needs of the Air Force.

For the Chief of Staff:

/s/ EARL C. HEDLUND,
Colonel, USAF,
Acting Director of Transportation,
Office, Deputy Chief of Staff, Materiel.

Mr. MAY. I notice in the bottom of the first page of that letter, it says:

Due to plans of the system to provide maximum dimensions as follows: Width, not to exceed 10 feet; height, not to exceed 14 feet.

There seemed to be some difficulty in getting something 14 feet high through a 14-foot structure. Did you discuss that problem with them?

Mr. CHACEY. Yes, sir. This was the thinking that they had at that time. I think it is further expressed in their last paragraph here. He says:

It is believed that the added emphasis now being placed on air transportability will result in further reductions of weights and dimensions of many vehicles.

Now the point I think that influenced them was that they were experiencing a situation in which they felt that they could keep

these under the 14-foot vertical dimension and realizing, I am sure, full well that you cannot put a 14-foot item through a 14-foot hole, but the structures themselves actually often provide some manner of an inch or two.

Actually there have been moved through underpass structures 13 foot 11 inch items, so it was a case of feeling that they were sufficiently close to this that they should not impose on this system the added expense of increasing the vertical clearance.

Mr. MAY. There is some indication received from the Chief of Ordnance on April 8, 1957, the second paragraph, Maj. Gen. J. H. Hendricks, which states—and I quote:

> Comments from the various commodity commands do indicate possibility of isolated equipment that should movement over public highways become necessary, special permits would be required.

So it was understood that there existed some oversize pieces of equipment which could not be moved over the Interstate System with 14-foot vertical clearances.

Mr. CHACEY. I do not believe that is the implication that he was putting into that letter. You see, we have worked out with the State highway officials the procedure whereby if a movement is essential to national defense and exceeds the statutory limitations of the State highway departments, designated representatives of Army, Navy, Air Force, and Marine Corps will contact designated representatives in each of the States and with them negotiate a permit, if the highway facilities are adequate to support this, or work the problem through routing or what actions could be taken to accomplish the necessary movement. So it is this special permit area which generally runs from 12½ to 14 feet that I am sure the Chief of Ordnance was alluding to. I am sure that he meant to be saying that we have items which will go over the 12½ feet normally accepted legal dimension in many States and we will obtain permits for those.

I am also of the opinion that they were thinking in terms of today's highway system and in terms of our experience in the past where occasionally when you had a requirement to move something in the vicinity of 15 or even 16 feet, you could find your way around these occasional overpass structures and I think that has been one of the problems that we have been confronted with in this area is the fact that the occasional requirement to move an oversize item can be accomplished by routing.

Mr. MAY. Mr. Chacey, based on your current knowledge, was that a valid premise at that time?

Mr. CHACEY. On my current knowledge?

Mr. MAY. Yes, sir.

Mr. CHACEY. Well, my present opinion is that as of today it can be done, but as of 10, 25 years from now, it cannot be done.

Mr. BALDWIN. Could I ask one question, Mr. Chairman?

Mr. BLATNIK. Mr. Baldwin?

Mr. BALDWIN. When you mentioned this letter, it stated in isolated cases they would have to obtain permits, isn't it true that the permits are also required for abnormal widths so that there was no clear indication from the letter whether they were referring to width or height?

Mr. CHACEY. Well, I assume the general subject of the exchange of correspondence was primarily with respect to height. You will re-

call in our letter to them, we specifically stated that we were calling their attention to this vertical clearance restriction. There is no question but what the overwidth item requires a permit just the same as the overheight item does and often you can turn these things sideways or do something so you are overwidth but not overheight and where that can be done and it is in the public interest and the State people and military are in agreement that is the way to move it, that is the solution to the problem. That is the reason these two people are supposed to work these problems out together in the field instead of us working in Washington here, trying to solve all the problems.

Mr. MAY. Mr. Chacey, at the time the Chief of Ordnance answered, there was little question but what there existed certain equipment that would not fit under a 14-foot overpass. For example, 155 millimeter gun transporter, runs from 14 feet, 2½ inches; another one 14 feet, 6½ inches; 105 millimeter howitzer, 14 feet, 5½ inches; 8-inch howitzer, 14 feet, 6½ inches, and tank recovery vehicle, a most important piece of equipment, 14 feet, 6 inches. So these may have represented the isolated cases.

Mr. SCHERER. Do you have any comment on that statement of counsel?

Mr. CHACEY. You have referred to items which it has been determined have an overriding military necessity from the standpoint of operational requirements. These items are normally moved by rail transportation. Some of them, if you want to move them in extremely restricted areas, will have to be disassembled.

Mr. MAY. Would you comment briefly on the difficulties encountered in moving this item, tank recovery vehicle, by railroad?

Mr. CHACEY. I only have here the height. I am not aware of the width of this particular item. Is it the 12-foot item? Well, there certainly are difficulties in moving 12-foot items over any transportation system and particularly our railroads where there is double tracking and your platforms, your siding and such as that.

Mr. MUMMA. Are you aware that railroads have special movements for high and wide articles? That would be no problem on the Pennsylvania Railroad?

Mr. CHACEY. The only problem is the timing and passing of other trains and such as that.

Mr. MUMMA. They regulate that, Pennsylvania has four tracks?

Mr. CHACEY. That is right; we have moved these items through what you call the high and wide——

Mr. MUMMA. It is no job, just a little slower.

Mr. CHACEY. One procedure for many years.

Mr. MAY. Mr. Chacey, in an emergency, would the military be concerned about the shutting down of adjoining tracks simply to move vehicles such as this?

Mr. CHACEY. Well, I think that there could conceivably be conditions in which this would present serious difficulties. There would be conditions in which this would not present a particular problem. Normally, it is not a thing to encourage, that is for sure, and it depends entirely on availability in large part; its availability and demand and if the availability is restricted and we lose a lot of it and if it is very limited and the demand is high, why it would have an adverse effect.

If there was no deficiency in our existing transportation system from the standpoint of losing some of our facilities or adequacy of them, operation of them, why then it would present some problems but it would not be a complete loss.

Mr. MAY. Isn't it the intent and objective to build our road system to accommodate such vehicles?

Mr. CHACEY. Well, as far as these extremely heavy loads are concerned, it has been our policy to move them by railway transportation. Now we have tried—and that is where we got into this bridge design aspect that we were discussing earlier—we have tried in the Department of the Army to work out the configurations and operational procedures which would make it possible to distribute the loads of our heavy equipment transporters in such a way that we could use them under regulated and controlled conditions, use our existing highways and structures that are designed for efficient commercial highway transportation; in other words, for our tank transporter. We have one that we are producing at the present time that will have eight axles, and our procedures provide for movement over an H20–S16 bridge down the center of the bridge five miles an hour on a controlled movement which we are using the same structure and not overstressing it any more than our normal——

Mr. MAY. Mr. Chacey, could you do that with a 14-foot vertical clearance when you are hauling things like a tank recovery vehicle and your howitzer, your guns?

Mr. CHACEY. On this tank recovery vehicle and on our heavy equipment transporter we are working on at the present time, it will have a vertical height of approximately 14 feet, 3½ inches.

Mr. MAY. Fourteen feet, three and one-half inches?

Mr. CHACEY. That is right.

Mr. MAY. Would it fit under a 14-foot structure?

Mr. CHACEY. That would be difficult under 14 feet.

Mr. SMITH. In relation to these vehicles and weapons which have been mentioned, there are a number of others in use or in experimental use in the Army that exceed the 14-foot type?

Mr. CHACEY. There are a good many items of military equipment which when loaded on normally available vehicles will exceed the 14-foot height.

Mr. SMITH. And a good number of them are an essential part of the striking power of the Army at the present time?

Mr. CHACEY. They come in two general classifications primarily: One, in the construction equipment of the Corps of Engineers, and two, in the Army Ordnance type of equipment which is in this type of equipment, tank recovery vehicle.

Mr. SMITH. A lot of the weapons which are used, I mean the artillery weapons and missile weapons are now mounted on equipment, would have considerable difficulty getting through a 14-foot clearance?

Mr. CHACEY. Well, the equipment itself, for example, tank recovery vehicle, its height on its own wheels is 11½ feet.

Mr. SMITH. I, of course, was not referring particularly to the tank recovery vehicle itself, but to tank recovery vehicles, in use; what would it be?

Mr. CHACEY. I don't believe I understood your question. To operate it by itself independently like it operates in the field, it has a vertical height of 11 feet, ½ inch.

Mr. SMITH. I am talking about a tank recovery vehicle with a tank on it.

Mr. CHACEY. Well, our tanks here by themselves have a vertical height, standing on their own tracks, of something in the vicinity of—I see they run here from 10 feet, ½ inch to 11 feet, 2 inches.

Mr. MAY. Mr. Chacey, when we talk about these items, we cannot speak of their height by themselves. When we talk about transportation, we have to talk about the piece of equipment plus the transport as it moves along our highways. We talk about self-propelled equipment; most pieces of self-propelled equipment will still be transported on a transport, is that true?

Mr. CHACEY. When it is going any distance, it is impractical to move a tracked vehicle under its own power, we have done this, this has been done on a good many occasions. We certainly are not recommending it and we do not anticipate that this would be a practical thing after we complete 20,000 of these overpass structures or something like that, but in the past we on many occasions have run the tank off the transporter, ran it across independent on rubber tracks and put it back on the transporter, and I think that potentiality and capability has influenced our people in considering this problem.

Mr. MAY. Yes, sir; Mr. Chacey.

Mr. BALDWIN. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Do I understand then, Mr. Chacey, whatever the facts may be, that the Army must not have considered this is a sufficient problem to make any recommendations to change the 14-foot level because these were in existence at the time that the Army submitted these recommendations in 1955 and 1957?

Mr. CHACEY. I am not certain that all this equipment was in existence at that time but I am certain that there was something very much comparable to it—there is a continual change which goes on in this equipment. This tank transporter or heavy-duty equipment transporter that I have referred to here, which is identified with the M–162, if you would like it identified, actually we do not have the first one yet.

We hope to have it here in 2 or 3 months, but there is a continual change, but the point that you made is an accurate one, that although some of this specific equipment that I have referred to may not have been in existence at that time, there was comparable equipment.

Mr. BLATNIK. Mr. Smith.

Mr. SMITH. Mr. Chacey, I am asking you these questions about equipment and movement because of my practical experience with some equipment during World War II in Europe. A lot of the artillery I was familiar with in movement at that time is now of a similar design which would be primarily self-propelled such as the 280 millimeter atomic cannons that have been developed, but I think that the Army certainly takes into consideration the possibility of having to utilize these roads for the actual movement of equipment in the United States for tactical purposes, don't they?

Mr. CHACEY. Oh, there is no question but what they are given consideration. These problems are very difficult and serious ones

and it ends up as a matter of judgment at very high level as to what is in the overall best interest.

Mr. SMITH. Do you all consider the possibility that if the interstate road system is built with this 14-foot clearance, it would be a very effective barrier against the invasion of Russian forces?

[Laughter.]

Mr. CHACEY. Well, I can only answer from a personal opinion, that isn't the way I approach these problems.

Mr. SCHERER. Mr. Chairman, so we may perhaps clear the air a little bit or maybe I will confuse it more, as I understand it, in 1957 you made a survey or a request for a review by all of the defense agencies, Army, Navy, Missile, Air Corps. They all reviewed their requirements and finally came to the conclusion that 14 feet was sufficient to meet the needs of the Defense Department. Isn't that right?

Mr. CHACEY. That is correct.

Mr. SCHERER. That was before sputnik, wasn't it?

Mr. CHACEY. That is correct.

Mr. SCHERER. Since sputnik you now say 16 feet?

Mr. CHACEY. That is correct.

Mr. BLATNIK. At this point, if you would, just withhold until the complete chronology and statement is in.

Mr. SCHERER. I realize, we were talking about a situation that existed in 1957 when this survey was made and then after sputnik we started talking about current missiles and current weapons, which changes the picture and naturally changes the requests.

Mr. SMITH. My reference was to the equipment existing in 1957.

Mr. BLATNIK. Counsel, will you please proceed?

Mr. MAY. Mr. Chairman, may we present this map to Mr. Chacey?

Mr. BLATNIK. Map showing rail clearance, map for T–43 and T–48 tanks and items approximating 12 feet wide.

Mr. MAY. Mr. Chacey, was that map prepared by your office?

Mr. CHACEY. To be honest about it, I don't identify the map. It may have come from Mr. Whilldin in our transportability office and it probably did. I am sure he showed it to me. But to be honest about it, I don't specifically recall.

Mr. MAY. I might say this was shown to us by Mr. Whilldin of your office and this becomes important because of the feeling in some parts that perhaps we can ship some of this equipment on the railroad. Now this relates to the railroads of this country and it sets forth certain restrictions dated 1952.

Now, would you read the comments on that map?

Mr. CHACEY. Under the priorities?

Mr. MAY. Yes.

Mr. CHACEY. There is a tabulation, priority, 1, 2, 3, 3–A.

Mr. MAY. About restriction, would you read that?

Mr. CHACEY. Priority 1—practically unrestricted movement.

Mr. MAY. Does that refer to a section of this country?

Mr. CHACEY. Yes, sir.

Mr. MAY. In general, where?

Mr. CHACEY. Central part of the United States and southern part of the United States is identified as area 1 and footnote here says:

Practically unrestricted movement especially in southeastern portion. Difficulty in circled areas.

And circled areas include three of our large cities, St. Louis, Chicago, and Minneapolis-St. Paul area.

Mr. MAY. Would you go on and read other restrictions in other sections of the country?

Mr. CHACEY. Priority 2 covers what might be referred to as Rocky Mountain area and Northwest and Southwest:

Minor difficulty encountered in mountain and coastal areas.

Priority 3 and 3–A is identified as the central west coast area and part of the Great Lakes area:

Generally difficult but not as restrictive as territory 4.

Mr. MAY. Where is territory 4?

Mr. CHACEY. Territory 4 is the New England States and its projects inland west of the Appalachian Mountains, generally speaking, and over to near the Mississippi River.

Mr. MAY. And as far south as what?

Mr. CHACEY. As far south as into Georgia, nearly to the coast of Florida.

Mr. MAY. Would you read the comments there?

Mr. CHACEY (reading):

Movement arranged only with great difficulty and in most instances will involve careful scheduling. Normally movement will be extremely slow with traffic halted on adjacent parallel tracks. Ten major railroads have refused to handle.

Mr. MAY. Thank you, Mr. Chacey.

Mr. Chairman, could that be made exhibit 3?

Mr. BLATNIK. Without objection, so ordered.

(Exhibit 3 follows:)

EXHIBIT 3

EXHIBIT 3

RAIL CLEARANCE MAP FOR T-43- T-48 TANKS AND ITEMS APPROXIMATING 12'-0" WIDE

Territory 1

Readily unrestricted commercially, generally in eastern portion. Difficulty in circled areas.

Territory 2

Minor difficulty encountered in mountain and coastal areas.

Territory 3 and 3A

Generally difficult but not as restrictive as territory 1. Mountainous movement prohibited between Washington and California in general vicinity of Mount Shasta. Between territory 2 - Premiers between territory 3 and 3A. Movement between territory 3 or 3A and territory 1 can be arranged with minimum restrictions.

Territory 4

Movement arranged only with great difficulty and in most instances will involve serious delays. Movement between territory 4 and territory 1 can be done with traffic halted on adjacent parallel tracks. No major railroads are refused to bands.

Mr. MAY. Mr. Chacey, we will try to move along in this chronology. April 5, 1957, you received an answer from the Chief of the Air Force who had referred the matter to the Air Research and Development Command for study. Do you have his reply there?

Mr. CHACEY. April 5? Yes, sir.

Mr. MAY. Mr. Chacey, I will quote the Chief of Staff of the Air Force and you tell me if I am correct. He says:

Commander of Air Research and Development Command has reviewed the geometric design standards for the National System of Interstate and Defense Highways and has agreed that the standards are adequate for the needs of the Air Force.

Mr. CHACEY. That is correct.

Mr. MAY. On May 7, 1957, the Chief of Transportation Office recommended to the Deputy Chief of Staff for Military Operations of the Army that the standards be accepted as satisfactory to provide for the present and foreseen needs of the Department of the Army. Is that true?

Mr. CHACEY. I believe that is correct.

Mr. MAY. On July 31, 1957, the major general staff agencies concerned replied that they had no objection to the standards established by AASHO.

Mr. SCHERER. Mr. Chairman, may I interrupt once more? I assume that when these letters are referred to and paragraphs are read from them or quoted by counsel that in the final record, we will include the whole letter, and I so move.

Mr. FALLON (presiding). Is there objection?

Hearing none, so ordered.

Mr. MAY. I might make mention here that inquiry was begun on January 15, 1957, and final answers were received finally on July 31, 1957, 6 months later.

In October 1957, Mr. Chacey, did the Chief of Transportation's Office notify the Federal Highway Administrator of its action?

Mr. CHACEY. Yes, sir; he did.

Mr. MAY. What did the Chief of Transportation say at that time?

Mr. CHACEY. Do you desire me to read the entire letter?

Mr. MAY. No, just summarize it, please. The second paragraph of that letter might be sufficient at this time.

Mr. CHACEY (reading):

From the reports it is concluded that the American Association of State Highway Officials' geometric design standards for National System of Interstate and Defense Highways are adequate for movement of present and anticipated equipment and materials of the Department of Defense agencies.

Mr. MAY. Mr. Chairman, may we make this exhibit 4? This is the letter that Mr. Chacey just referred to.

Mr. FALLON. No objection, so ordered.

(Exhibit 4 follows:)

EXHIBIT 4

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF TRANSPORTATION,
Washington, D.C., October 1, 1957.

Hon. B. D. TALLAMY,
Federal Highway Administrator,
Department of Commerce, Washington, D.C.

DEAR MR. TALLAMY: In carrying out the responsibilities of this Office to insure integration of the foreseen highway needs of the Department of Defense into

the highway programs of the United States, we asked the Departments of Army, Navy, and Air Force to review the geometric design standards for the National System of Interstate and Defense Highways adopted by the American Association of State Highway Officials July 12, 1956, and approved by the Bureau of Public Roads July 17, 1956. One of the primary purposes for these reviews was to insure that the minimum vertical clearance of 14 feet for bridges and underpasses, which might restrict the transporting of defense material, was brought to the attention of all concerned.

From the reports it is concluded that the American Association of State Highway Officials' geometric design standards for the National System of Interstate and Defense Highways are adequate for the movement of present and anticipated equipment and materials of the Department of Defense agencies.

We are particularly pleased with and fully endorse the provisions of the standards requiring control of access for all sections of the Interstate System. For approximately the last 10 years the Department of Defense has advocated the construction of the Interstate System as a connected system of highways designed with control of access. The Department of Defense feels strongly that this feature is essential to insure priority movements of defense traffic during emergencies and to preserve the effectiveness and efficiency of the Interstate System. It is recognized that you may find it necessary under certain conditions to permit some intersections at grade on lightly traveled two-lane roads in the sparsely settled rural areas of the West, and under extraordinary conditions an occasional grade crossing elsewhere. In the latter case agreement is required between the State highway department and the Secretary of Commerce, and it is our strong recommendation that such exceptions be kept to the minimum. Where a grade crossing is permitted, adequate authority should be maintained, by the State and the Bureau of Public Roads, to restrict the use of the intersection and ultimately eliminate it, since it is conceivable that many will find it advantageous to use it. Once a point of access is available, it will be difficult to prevent development of facilities, such as gasoline stations and motels, along the intersecting route, and the more popular the route becomes the more demand there will be for the continued use of the connection.

I am sure that you are aware of the many problems which can develop by permitting at-grade access to the Interstate System. I merely wish to reemphasize the Department of Defense views on this subject and to request that every proposal for such access be carefully studied with the view to limiting such connections to the greatest extent possible.

Sincerely,

PAUL F. YOUNT,
Major General, U.S. Army,
Chief of Transportation.

Mr. SCHERER. I understand that any communication, document or letter, from which is read a paragraph, that the whole letter or communication or document will be made part of the record. That was the import of my motion and I understand that motion was adopted.

Mr. MAY. Mr. Chacey, thereafter did the Chief of Transportation's Office notify the Assistant Secretary of Defense, Supply and Logistics, of its action?

Mr. CHACEY. Yes, sir. On October 15, a memorandum was sent to Mr. Earl Smith, Director of Transportation, Communications and Petroleum Policy, Office of Assistant Secretary of Defense, Supply and Logistics.

Mr. MAY. Fourteen months after the adoption of the standards, Chief of Transportation's Office notified the Assistant Secretary of Defense that it approved of the 14-foot clearance. Did you personally thereafter become concerned about the vertical clearance problem, Mr. Chacey?

Mr. CHACEY. Yes, sir.

Mr. SCHERER. Again, pardon me, so we can keep the record straight, after receiving this latter communication to which counsel referred, was the position of the Department of Defense then communicated to the Bureau of Public Roads?

Mr. CHACEY. Yes, sir; that is the letter from which I read that paragraph in the letter from the Chief of Transportation, Department of the Army, to Mr. Tallamy, Federal Highway Administrator.

Mr. SCHERER. What date was that?

Mr. CHACEY. That was October 1, 1957.

Mr. SCHERER. Is that the letter that was offered in evidence?

Mr. MAY. Yes, sir.

Mr. SCHERER. And that letter was dated October 1, 1957, did you say?

Mr. CHACEY. That is correct.

Mr. SCHERER. So the record is again straight, when was that with reference to the sputnik? My recollection is sputnik came in 1958.

Mr. CHACEY. No, sir; that was a few days before sputnik.

Mr. SCHERER. A few days before sputnik.

Mr. CHACEY. Matter of weeks. About 1 week, October 8.

Mr. SCHERER. Nevertheless, prior to sputnik?

Mr. CHACEY. That is correct, and, of course, in the development of policy such as this, these letters and the thinking that generated them was sometime before that.

Mr. SCHERER. Sometime before, so it takes you as long in the Defense Department to do things as it does Congress to act on most things.

Mr. CHACEY. I shan't comment on that, sir.

Mr. SCHERER. You don't have to, that is a statement on my part. I mean it took Congress from January 20 to September, 9 months, to pass the Highway bill last year when the program was falling apart.

Mr. CHACEY. Rather human, I believe.

Mr. MAY. Mr. Chacey, when and how did you become concerned about the vertical clearance problem?

Mr. CHACEY. Well, I think personally the evidence speaks for itself. I was somewhat concerned about it in 1956 but in carrying out our responsibilities again, it is not to make policy, but to insure coordination of defense requirements and integrating them into the actions of the Federal Highway Administrator in carrying out the Federal-aid highway program.

I again became concerned over this and discussed it with some of our people and in the Bureau of Public Roads shortly after the experience of sputnik and in view of the emphasis that was being placed on missiles, missile development, and such as that.

Mr. MAY. Did you understand at that time that they were having some problems in the transporting of the Atlas missile from California to Cape Canaveral?

Mr. CHACEY. Yes; however, I can't be specific. I knew that it was taking quite a long time to move them and again I can't say the number of days, but it was a difficult routing movement, not normal to highway transport movement, a rig requiring special treatment.

Mr. MAY. Thank you.

Mr. SCHERER. But the difficulties you were having in 1957 of moving this missile across the country to which counsel referred was not the result of any negligence or any construction on this new Interstate System. We had barely started construction hadn't we?

Mr. CHACEY. To my knowledge, it was not.

Mr. MAY. Mr. Chairman, we might halt here. When we reconvene, we can hear from the gentlemen that have been responsible for the transportation of the Atlas these many months.

Mr. FALLON. Announcement from the Chairman of the Public Works Committee. He has a Rivers and Harbors bill as the first order of business on the floor, so the committee will recess until 1:45.

(Thereupon, at 11:45 p.m., the committee was recessed, to reconvene at 1:45 p.m., this same date.)

AFTERNOON SESSION

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program will continue its public hearings in this afternoon's session. The next witness will be Mr. Armlon Leonard. Mr. Leonard, would you take the witness chair? You are accompanied by Mr. J. E. Ozburn and Mr. J. Fred Dewhurst. Will you gentlemen take your seats and make yourselves comfortable?

I certainly express the appreciation of the Chair, the members of the committee, and the staff, for the splendid cooperation and assistance that you gentlemen have given in this inquiry. You have perhaps had, may I say, far more actual experience in moving large oversized pieces of military equipment over the highways of America than most of the persons that we have knowledge of.

Mr. May, would you interrogate these men and have them give their full names and their official titles for the record?

Mr. MAY. Would you do that, Mr. Leonard—state your full name and position, please?

STATEMENT OF ARMLON LEONARD, PRESIDENT OF LEONARD BROS. TRANSFER, MIAMI, FLA., VICE PRESIDENT OF HEAVY SPECIALIZED CARRIERS CONFERENCE, AMERICAN TRUCKING ASSOCIATIONS, INC.; ACCOMPANIED BY J. E. OZBURN, VICE PRESIDENT OF SALES AND SECURITY; AND J. FRED DEWHURST, VICE PRESIDENT OF TRAFFIC

Mr. LEONARD. My name is Armlon Leonard. I am president and general manager of Leonard Bros. Transfer in Miami, Fla. I am also a vice president of the heavy specialized carriers conference of the American Trucking Associations.

I wish at this time to make note of the fact that on the list of witnesses that you had prepared today there should be a correction in that it showed me as a vice president of the American Trucking Associations, which is not correct. I am a vice president of the heavy specialized carriers conference of the American Trucking Associations, and representing that conference on the American Trucking Associations executive committee.

Mr. MAY. Fine. Thank you, Mr. Leonard.

Mr. LEONARD. I am representing here today this conference and not the American Trucking Associations.

Mr. MAY. Yes, sir.

Mr. Ozburn?

Mr. OZBURN. Yes, sir.

Mr. MAY. Would you state your full name and your position, please?

Mr. OZBURN. J. E. Ozburn. I am vice president of sales and security of Leonard Bros. Transfer Co. My residence is Miami, Fla.

Mr. MAY. Thank you. Mr. Dewhurst?

Mr. DEWHURST. I am J. Fred Dewhurst. I am the vice president for traffic of Leonard Bros. Transfer Co., and my residence is also in Miami, Fla.

Mr. MAY. Thank you. Mr. Leonard, how long have you been engaged in the hauling of oversized pieces of equipment?

Mr. LEONARD. I have been in the truck transportation business for 25 years, in all of which time I have been in the specialized heavy hauling end of the trucking business.

Mr. MAY. Does your firm operate locally in Florida or is it an interstate operation?

Mr. LEONARD. We operate in the vicinity of Cape Canaveral and Orlando, Fla., on local operations, and in Miami, Fla., we have operated almost in the entire southern part of Florida on local operations on heavy machinery and heavy and bulk equipment moving, and throughout the United States as an over-the-road carrier of aircraft equipment, aircraft engines, and missiles, and heavy machinery, transformers, and other large and bulky items.

Mr. MAY. Do you do hauling for the military?

Mr. LEONARD. Yes, sir; we do. We have been hauling continuously for the military since the year 1941.

Mr. MAY. About what percent of your business would be devoted to transportation for the military?

Mr. LEONARD. It is approximately 85 percent.

Mr. MAY. Mr. Leonard, has the business of transporting oversized pieces of equipment increased in the last, let us say, 10 years?

Mr. LEONARD. It is my humble opinion, in my experience, that our company alone, I would say, as compared to 10 years ago—today we have 100 to 1. On the basis of that, Mr. Chairman.

Mr. MAY. For every shipment you made 10 years ago, you now make 100 shipments?

Mr. LEONARD. I would say as a means of comparing them that would be a good way to do it, because in my opinion that's it.

Mr. MAY. Is that typical of other members of the conference?

Mr. LEONARD. I think so. Yes.

Mr. MAY. How many members would there be in the heavy specialized carriers conference?

Mr. LEONARD. We have in our conference some 100 or more members that are located throughout the United States in various larger cities. Of course, this is not all of the heavy specialized carriers throughout the country, but in our conference there are that many.

Mr. MAY. Do they all haul for the military?

Mr. LEONARD. I would say predominantly most of them do.

Mr. MAY. And the greatest percentage of their business would be devoted to military transportation?

Mr. LEONARD. In the case of the others I'm not too sure that all of them have their predominant amount in the military. We ourselves have more or less catered to that end of the business. Some of the others I might say 50–50, or 40–60.

Mr. MAY. Could you mention briefly some of the pieces of equipment which you are called upon to transport?

Mr. LEONARD. Well, the one of which they were speaking today, of major importance to us as we transport it, is the Atlas missile, which we have been transporting for the past 2 years and more. The Titan missile. We haul aircraft engines and aircraft parts, fuselages, wings, aircraft wings, and other types of missiles other than the Titan and Atlas. We do a considerable amount of aircraft hauling for major airlines, like Pan American, Eastern, National, Delta; and we move generators and transformers for power and light companies. We have massive pieces of machinery, large pieces of machinery we transport.

Mr. MAY. The problems that you encounter in transporting these pieces of equipment would be typical of your problems that are encountered by other members of the conference?

Mr. LEONARD. I would think our experience in the heavy specialized carriers' field would be typical, because of the fact that we do not operate solely within the State of Florida, where our major local operation is. Our major over-the-road operation is nationwide and we haul from Maine to California, and we have three offices in California, two in Texas, and on the eastern seaboard have other offices in Pennsylvania and Delaware, and so on.

Mr. MAY. Do you recall when you were engaged to transport the Atlas missile from California to Cape Canaveral?

Mr. LEONARD. Yes, sir. I recall that.

Mr. MAY. When did that take place?

Mr. LEONARD. Our first move was, as I recall it, about Thanksgiving Day. Somewhere in that neighborhood. Because the men were concerned with moving out on Thanksgiving Day of 1957.

Mr. MAY. You were called upon to establish routes prior to that. Do you recall when you attempted to find the routes from California to Cape Canaveral?

Mr. LEONARD. The Convair-Astronautics people in San Diego, together with the Air Force Department at Mira Loma Air Force Base, inquired of us around September of 1956 to see if we could help survey a probable route for the transportation of the Atlas missile from San Diego to Cape Canaveral.

Mr. MAY. And that study took place when?

Mr. LEONARD. September of 1956.

Mr. MAY. Mr. Chairman, you understand that that study took place just 2 months after the standards were adopted for the Interstate System.

Who made the study to establish the route, Mr. Leonard?

Mr. LEONARD. We turned that problem over to our vice president, Mr. Ed Ozburn. He travels and makes all contacts with the various Government agencies, and did quite a bit of traveling back and forth. He, together with the men who would be involved in transporting the missile and driving the trucks, made the survey.

Mr. MAY. Mr. Ozburn, could you tell us briefly the problems you had in attempting to establish such a route?

Mr. OZBURN. Yes, sir. We would—we could go so many miles to an underpass and then we would have a problem of getting under the underpass. Possibly it would be 14-foot clearance shown, but when

you measured it it might not be quite 14 foot due to a new layer of asphalt being applied to the surface of the road, or sometimes what we would call a dishpan dip underneath the underpass.

Mr. MAY. Will you explain that?

Mr. OZBURN. Yes, sir.

The missile itself is about 85 feet in length loaded. The front end would go down into an incline and then it would start up the—it would go down the decline and then start up the incline and quite often you would lose as much as 12 or 14 inches due to the fact that the rear end had not gotten down into your basin or the bottom of the dip before your front end was up.

Mr. MAY. We might establish here, Mr. Ozburn, the height of the Atlas missiles as carried along the highway on the transporter.

Mr. OZBURN. The height was just a fraction under 14 feet.

Mr. MAY. Mr. Chairman, we might stop here. We have a model of the Atlas missile and we have some slides later of the Atlas missile on its transporter, but we have to take note of the fact that the Atlas missile as it has been transported by Mr. Leonard was transported without the vernier engines. At the present time when it is being transported by Mr. Leonard these vernier engines, which are used for the guidance of the missile, are removed. When the vernier engines are removed the Atlas would be just under 14 feet. With the vernier engines on the missile when it is being transported you must add another foot, and maybe 2 or 3 inches more. That may become important later on in our hearings.

Mr. ROBISON. Did counsel say 14 feet when loaded?

Mr. MAY. Yes. Mr. Ozburn said that the missile on the transporter as it is being carried along the highway was just under 14 feet. That would be 13 feet how many inches?

Mr. OZBURN. I would say 13 feet and 11 and a fraction inches. That would vary quite often due to the size of the tires on the trailers, together with the size of the oscillating fifth wheel on the tractor.

Mr. MAY. If it depends on the size of the fifth wheel it might cause the height to vary as much as how much?

Mr. OZBURN. As much as 2¼ inches additional height.

Mr. MAY. Also the tires on the tractor might have a bearing on the height?

Mr. OZBURN. That is correct. If they are brandnew tires, of course, and are properly inflated, then they do give you more height.

Mr. MAY. So you are unable to state that the Atlas missile and its transporter would always be 13 feet 11 inches?

Mr. OZBURN. At least that. Yes, sir.

Mr. MAY. It could be higher than that?

Mr. OZBURN. It could be. We have transported it and had a great deal of trouble one time when the fifth wheel was unusually large. We just had lots of trouble.

Mr. MAY. Due to these special rigs used to haul this missile you are able to lower the missile on occasion when you reach a certain spot?

Mr. OZBURN. That is correct. We lower the missile in two ways: By deflating the tires and also the trailer is so constructed that it has hydraulic jacks that work in reverse, so we can lower the trailer several inches. But we cannot run in this position for any length of time and have to move very slowly due to the impact.

Mr. MAY. As we shall see, you were able to get this missile under some of the 14-foot overpasses, but I understand you were recently alerted to the fact that you might have to haul something upward of 15 feet. Is that true?

Mr. OZBURN. That is true. Yes, sir.

Mr. MAY. Is that true, Mr. Leonard?

Mr. LEONARD. Yes, sir.

Mr. MAY. Do you know how high that would be?

Mr. LEONARD. We have been alerted to some of them as much as 16 and 17 feet in height. We had one call just the other day from someone who had something 18 feet high to move.

Mr. MAY. Would you tell us about that?

Mr. LEONARD. We had a call from Hartford, Conn., on the movement of a missile part from the Pratt-Whitney plant, and that same afternoon we had a call from the Chance-Vought plant at Fort Worth, Tex., or Prairie, Tex., in which they inquired as to our possible hauling of a portion of a missile, or at least we assumed it was. They would not come right out on the telephone with it, but it was to go to United, Fla., for Pratt-Whitney, where they have a large defense plant, just above West Palm Beach. They would do some work on it there, and then ship it to Cape Canaveral. And another one would go to Redstone Arsenal in Huntsville, Ala.

Then the Chance-Vought people in Prairie, Tex., called us that same afternoon and told us that they had this enormous piece, about 18 feet and a third of an inch high, not loaded, which was to move to Cape Canaveral. And regardless of the cost to get it over the highways, they had to make the move because it just had to get to Cape Canaveral.

Fort Worth, Tex., is a good distance from any water, so we expressed our feeling to them they should at least try to get it to go overland to one of the rivers close by, and then put it on a barge and barge it out and bring it in to the closest point, and then transfer it to land and then up. But in each case on the origin they had to move 150 miles overland and at destination about 40 to 50 miles.

Mr. MAY. Did they mention that they were not concerned with the cost of movement?

Mr. LEONARD. They did express themselves to the effect that if necessary we would have to take the tops out of bridges, or make some temporary roads, or get some pontoon-type bridges to ford across these rivers. The fact was that this thing must go. They did not tell us so, but our experience with it would tell us it had something to do with the experiment in space exploration that was going on.

Now, 18 feet is what they told us, and they did ask us if we could send one of our men to help to make a survey, to spend about 2 weeks with them, and they would furnish a helicopter and one of their engineers, and an operator for the helicopter, so that they might find a possible route, or make a possible route to get to some water, so that they could load it onto a barge and move it from there by barge to Cape Canaveral.

A barge is all right when you are not in a hurry, in time of peace. We are all in a hurry now, even though it is peace, but in time of emergency I don't believe you want to fool around with barges for these high-priority items.

Mr. MAY. Mr. Dewhurst, as traffic manager you have received calls from various people in relation to such problems, have you not?

Mr. DEWHURST. Yes, we have.

Mr. MAY. Can you relate those to the subcommittee?

Mr. DEWHURST. Supplementing what Mr. Leonard already testified to, we have had calls from such people as the Thiokol Chemical Co. with somewhat of the same problem. They are located up in New Mexico. They have another plant in Huntsville, Ala., and another plant I think adjacent to White Sands, and they have a similar problem to this.

Mr. MAY. So it is not unusual for these various companies to call you people to ask for your views on transporting particular items?

Mr. DEWHURST. They seem to think we have been able to bring the Atlas missile through all right, and we are probably going to be able to give them some concrete information on these other problems.

Mr. MAY. Do these people who call seem to be conversant with the difficulties of transporting such items?

Mr. DEWHURST. Some of them are and some of them are not.

Mr. MAY. Mr. Leonard, do you have any idea of the cost of an Atlas missile?

Mr. LEONARD. We do not know the exact cost, but we have been asked to insure it for $1,500,000. And each move we make we insure it for that amount. I don't know where the figure comes from. I think Vice President Nixon at some time or other over the radio or television did announce it as the possible value.

Mr. MAY. As we shall see, you make all your movements with respect to the Atlas missile in the daytime. Could you suggest the reason for that?

Mr. LEONARD. The width and height does restrict us to daylight movements, and especially the height, because we would not take a chance of damaging an article of this value, worth the $1,500,000 value you just spoke of. It is foolish for us to go down the highway that way. We have not only the value of the Atlas missile itself, but the concern that on the narrow or two-lane highways you find so many passing autos. In some of these places we must go through quite a number of towns instead of circumventing the area. So it is a danger both to our business and the missile at nighttime.

Mr. MAY. I wonder if we might at this point, Mr. Leonard, see some of the slides you brought with you? They might throw a little more light on this problem.

Mr. LEONARD. Yes, sir.

(Showing of slides began here.)

Mr. DEWHURST. This is the Atlas missile loaded up to be transported from San Diego, Calif., to Cape Canaveral, Fla. The 2,500 miles of highway over which this missile, exceeding, when loaded, 13 feet 11 inches in height, and 14 feet in width and 87 feet in length, must travel, represents an obstacle course of old bridge structures, low underpasses, low-hanging highway signs, toll gates, and dense traffic. For the safety of the missile and for the safety of the traveling public three escort cars must accompany the missile to help handle the problems of transportation.

To combat this obstacle course, the Atlas missile trailer has been especially designed. Because of its length it has to be steered at the

back by a tiller man, who rides in a glass enclosure at the rear of the trailer.

Because of the low clearances encountered during the trip, a small tower called the crow's nest is required where a man can be placed to watch the clearance between the top of the missile and the bridge or underpass as the missile passes through.

As an additional precaution for low clearances, the company has installed height warning devices on its tractors. These devices are fixed to the bumpers of the tractors. The bar connecting uprights is set about an inch higher than the missile. If this bar comes in contact with an overhead obstruction that would cause damage, a bell or warning sounds in the cab of the tractor, warning the driver to stop before the damage occurs.

Bridges must be approached with caution because the clearance between the top of the missile and the bridge is always close. The horizontal crosspiece on this bridge presents a difficulty and travel is hazardous if the clearance between this beam and the road is less than 14 feet. The clearance here, as the sign shows, is only 14 feet.

The man is placed in the crow's nest to watch the top of the missile to see it is not damaged as it passes through this bridge. The entire trailer can be lowered by means of hydraulics and on many occasions the air must be removed from the tires in order to reduce the height still further.

When the bridge is too narrow to permit another vehicle to pass the missile as it crosses the bridge, traffic must be held until the missile has crossed.

An escort car is sent ahead for this purpose and the driver, incidentally, must be well schooled in public relations. As can be seen here, sometimes the traffic backs up for many miles.

Under emergency circumstances, where rapid transportation would be required in both directions, much difficulty would be encountered by conditions like these.

Here is an additional hazard. The train crossing this bridge could have caused the underpass to sag just enough to damage the missile had the missile been underneath. Fortunately the missile had cleared this underpass before the train crossed above.

Mr. LEONARD. Mr. Ozburn, would you tell them about this?

Mr. OZBURN. Another truck, not this one but the one following this particular truck here, was loaded with a papercutter machine. The carrier was J. Rose of Dallas, Tex. They became hung up under this bridge. We do not know how long it took them to get out from under it because they were hung just as we had cleared the bridge. But I know they had blocked traffic for a long time, and you will note they are on the wrong side of the highway too, which creates a very hazardous condition.

Mr. LEONARD. I might point out with the proper clearance this would not be necessary. There would be no holdup of traffic or hanging up of vehicles.

Mr. MUMMA. Do not the railroads maintain higher standards than 14 feet?

Mr. LEONARD. We have pictures with us today that show some are 12½ feet.

Mr. MUMMA. I will refer to the Pennsylvania Railroad again. Their specifications call for 22 feet and they would not have a condition like that.

Mr. LEONARD. We had a load on one of our trucks that was loaded 13 feet and we paid $85,000 for the damage to a bridge on a railroad underpass in Pennsylvania.

Mr. SCHERER. I do not know whether the record discloses it or not, but the clearance shown on the slide is how much, 14 feet?

Mr. OZBURN. Yes.

Mr. MAY. Mr. Leonard, in relation to the bridges on the railroad, when we talk about 22 feet vertical clearance, we are not talking about railroad structures over an interstate road or a highway.

Mr. LEONARD. Excuse me, Mr. Mumma. If that is what you are talking about, the railroads maintain a——

Mr. MUMMA. When they build a bridge they maintain 22 feet.

Mr. LEONARD. They maintain their own clearances 22 feet.

Mr. MUMMA. Under there they make them high because they do not want responsibility for it. What railroad was that in Pennsylvania?

Mr. LEONARD. I have no idea. It was close around Philadelphia, though.

Mr. DEWHURST. When the size of the missile is compared with the size of this underpass, the transportation difficulties can be more clearly understood. The traffic problem is again evident by the number of cars on the hill behind the missile. On this underpass the trailer had to be lowered and the air removed from the tires, taking considerable time and causing delay and irritation to the motorists behind the missile.

Mr. SCHERER. That happens with trucks every day.

Mr. DEWHURST. A higher clearance could have avoided this difficulty.

Mr. SCHERER. Do you know when this overpass was built?

Mr. LEONARD. We have no idea when it was built, sir. No.

Mr. SCHERER. Has it been built since the 1956 Highway Act was passed?

Mr. LEONARD. I would say it has not. It was built previous to that. Yes, sir.

Mr. OZBURN. The particular underpass in question here is near Hempstead, Tex., on U.S. 290.

Mr. SCHERER. Is that a 14-foot clearance?

Mr. OZBURN. No, sir. We had to reduce the height of the wheel to get it underneath.

Mr. SCHERER. The only reason why I asked these questions is, unless we have some testimony as to the clearance as shown on the slides, it it is not reflected in the record. Do you remember, or does your record show, what the clearance was under this particular overpass which we are now being shown on the screen?

Mr. LEONARD. I believe Mr. Ozburn in the beginning said that the Atlas missile loaded was approximately 14 feet, Mr. Scherer. There are some cases where you might be going down the road and there would be some bounces up and down. You must be careful and have more than 14 feet clearance to get under there.

In this case I am sure they were going very slow so it must have been a little less than 14 feet here.

Mr. SCHERER. Do you know whether this missile was developed since the standards were adopted in 1956?

Mr. LEONARD. We made the survey for transporting this missile and began it in September 1956. Or we were asked to do it, to make a survey at that time. I believe that was after the time you spoke of here today.

Mr. MAY. Mr. Chairman, the Atlas code name was given to the ICBM project in July 1951, and in July 1954 the Western Development Division of the Army Research Development Command was established to manage the Atlas program.

Mr. SCHERER. Was there any size determined on those dates as far as the Atlas was concerned? Hasn't the size of these missiles been increased from time to time?

Mr. LEONARD. You are referring this question to the counsel, aren't you?

Mr. SCHERER. Yes, to counsel. Again I think we should keep the record straight.

Mr. SMITH. Obviously they knew the size prior to the time this thing was set.

Mr. SCHERER. I cannot hear you.

Mr. SMITH. I hope they knew the size prior to the time it was set.

Mr. SCHERER. If they decided it was this high or this big in 1951, by 1956 somebody would have known it took more than a 14-foot clearance to get it through.

Mr. MAY. In December 1954 the basic configuration was decided upon for the Atlas, and at that time the size was decreased. We will have——

Mr. SCHERER. Did you say decreased?

Mr. MAY. It had been decreased to its present size from something prior to that. We will have testimony later on in the hearings, Congressman, in more detail, on the Atlas missile.

Mr. DEWHURST. May I continue, Mr. Chairman?

Mr. BLATNIK. Proceed, please.

Mr. DEWHURST. Cities have problems, mostly with low-hanging wires. Narrow streets, with cars parked on each side. Sharp corners are always a hazard, and except for the backseat driver and his ability to steer the back of the trailer, this corner would never have been turned.

Mr. LEONARD. We did not plan our pictures this way, but the gentleman, Mr. Chacey, I believe, who was testifying this morning on roads circumventing the cities—here would be a good example of a reason why you should circumvent the cities on the Federal program of roads.

Mr. DEWHURST. The slightest scratch to the missile's surface can cause costly delays and expensive repairs. To avoid this, the flagman again mounts the crow's nest to watch for low-hanging branches. Motorcycle policemen perform an indispensable job in travel through the cities.

Mr. LEONARD. Mr. Ozburn, would you show them the second missile moving behind this one? Sometimes we have double trouble.

Mr. OZBURN. At this particular time we did have two, and it was during the Christmas holidays.

Mr. DEWHURST. Many of our toll roads have a horizontal obstruction across the entire highway to designate the various tollhouses and

for traffic signals. Unless some provision is made for the passage of high loads, toll roads as a means of rapid transportation for high loads have to be ruled out.

Mr. OZBURN. You will note we are coming around on the left-hand side of the highway here and had to jump this curbing, and very near scrape this, and be extra careful to come through the tollgate.

Mr. DEWHURST. Industry is manufacturing larger pieces at the factory where the technicians and machines are available. Consequently the products of our factories are moving to their destination in larger components. This is a convoy of some six vehicles moving a General Electric telemetering system, which is used in the Atlas missile program. We are advised that this system is so delicate that it must be manufactured under rigidly controlled temperatures, and consequently the pieces must be moved in their largest components to insure the greatest accuracy.

Mr. OZBURN. You will note this particular piece apears to be loaded on a flat-bed trailer, but if you will look very closely the piece protrudes through the trailer and rides just above the ground.

Mr. LEONARD. The reason why Mr. Ozburn is pointing that out is that in the trucking business, as in other businesses, we do all we can to avoid delay in meeting these overheights we are speaking of today. As in this case, the special trailer provided a well in which the item was stuck down through there to come within 10 inches of the ground. We do all we can to prohibit these height problems.

Mr. DEWHURST. The highest piece in the convoy is the piece shown here, which is 14 feet high. There are two other loads which are over 11 feet high, and there are two loads which are about 15 feet wide. The 14-foot piece has just cleared this old wooden underpass. The other wide load can be seen in the background. Due to the decline to the underpass and the incline beyond the underpass, if this piece was long as well as high it never would have cleared this underpass.

Mr. OZBURN. That, gentlemen, is what I was attempting to explain to you a while ago when I said the missile was 87 feet long and before we could get all the way down the front of it would be coming up and you would lose a great deal of clearance through this.

Mr. DEWHURST. The clearance on this Southern Railway bridge is 14 feet. Extreme care had to be used in coming under such an underpass when a half an inch counts. If this road were resurfaced, this piece would never come under this bridge.

Mr. LEONARD. Will you explain why you are over to the side that way?

Mr. OZBURN. You will note we are at the far right-hand side. In making our survey for this particular move we found that the bridge is lower than from here down. So you have to keep all of that in mind and make records of it. This side appears to be higher, but the angle from which the picture was made is an optical illusion. This is the lowest place under this overpass.

Mr. LEONARD. In trying to solve all of these problems and determine which is the best place to work through, you lose time and clog up traffic.

Mr. OZBURN. That is true.

Mr. LEONARD. With a higher vertical clearance this would not be necessary.

Mr. DEWHURST. The old type of bridge with the superstructure such as this one is a constant source of difficulty for high loads.

Mr. OZBURN. You will note right at the beginning of the bridge some high load has struck the crosspiece here. Fortunately it bent it upward. Quite often they will bend down, which naturally lowers the clearance. That is another problem we have to be quite aware of and watch out for in making these trips. Even if we made the survey the day before, we continue to watch for something that passed maybe during the night and did damage. As you saw the height-gage warning signals installed in front of our trailer, that is where that really pays its way.

Mr. MAY. Before the height-gage signals were installed, isn't it true that one of the missiles was damaged due to an accident such as you just mentioned, Mr. Ozburn?

Mr. OZBURN. That is correct. We used to use only one height-gage antenna, and of course it did not strike the piece of metal which was hanging down just two or three inches, and the boys failed to see it. So after we paid off that insurance claim we put two height-gage finders on and then the crossbar.

Mr. MAY. How badly was the missile damaged?

Mr. LEONARD. About $20,000 at that point. It was not too great a damage.

Mr. MAY. Just a slight one.

Mr. LEONARD. But to us a $20,000 damage is a lot of money in the trucking business.

Mr. MUMMA. How about insurance?

Mr. LEONARD. We have a deductible.

Mr. SCHERER. Do we have any slides here showing trucks passing under underpasses on the new Interstate System built since the 1956 act? Do you have any of those?

Mr. LEONARD. I do not believe we have any of those, Congressman Scherer, actually on one of the Federal highways.

Mr. OZBURN. We do pass a strip of that new Interstate System in New Mexico out near Lordsburg.

Mr. SCHERER. That has been built since 1956?

Mr. OZBURN. I understand it is going to be a part of the new system. Yes.

Mr. SCHERER. Do you have any overpasses on that?

Mr. OZBURN. I only traveled on the first nine, and this has been done since I made my trips, so I don't know.

Mr. DEWHURST. Extreme care has to be used by the drivers to cross such bridges, even to the extent of watching out for the corner braces. Carelessness here could be disastrous. Needless to say, traffic must be held at the front of the bridge because the cars could not pass the load on the bridge.

Mr. OZBURN. Here is another case where we found one side of the bridge slightly higher than the other side. You see, I am bearing to the right and still have to be very cautious not to strike this crossmember.

Mr. DEWHURST. This type of bridge without this superstructure is much better for handling high and wide loads.

Mr. LEONARD. Mr. Ozburn, this is one of those trailers, is it not?

Mr. OZBURN. Yes. This is a better view of a trailer where the shipment itself goes through the bed of the trailer and rides just above the surface of the road.

Mr. DEWHURST. This tollgate has a position for the movement of high loads around the gate. Without this precaution this bridge would be effectively blocked to high loads.

This is the Atlas missile ready to fill her date with destiny. She is in this position not because of the sound highway system of the United States, but because of the ingenuity of the transportation specialists, who have been able to transport it over an obstacle course of mountains, old bridge structures, low underpasses, low highway signs and tollgates. This is a peacetime operation where speed is not essentially a governing factor, but contemplate a delivery time of 9 days to put this missile from origin to destination in a time of national emergency and see how an inadequate highway system could literally shock the Nation.

Mr. MUMMA. Have you had to turn back on any loads you could not make the delivery on?

Mr. LEONARD. I do not believe we have had to turn back so much as we have had, in making our survey, to be positive we could make it before we started. We have turned down shipments which were tendered to us both for the Government and commercial which we could not make delivery of because of the height. We learned once or twice it is better to look ahead and we could go to the expense of checking our roads first.

Mr. MAY. Mr. Leonard, how many people including company personnel and military policemen would be necessary to make such a movement?

Mr. LEONARD. When there is a single Atlas moving there are nine of our people and there are four military guards. Here is one of our pictures which shows the military personnel with their side arms, and there are from one to two technicians from the Convair people's plant.

Mr. MAY. How many pieces of equipment do you use, that is, vehicles?

Mr. LEONARD. There is one tractor pulling the Atlas missile and transtainer, and another tractor pulling a van load of spare parts and equipment. On a single move there are three escort vehicles. Each of these vehicles and each of the tractors used on this move are equipped with a two-way radio, so that the drivers can contact one another back and forth, and in that way help to expedite the move. Also that includes safety of operation on the load. Where the head escort vehicle goes up front to stop other vehicles from coming through a bridge or a narrow passage, he radios back and says, "Come on through," which helps to expedite the movement.

Mr. SCHERER. About how many of these missiles have you transported?

Mr. LEONARD. I would say we have transported in the neighborhood of about somewhere between 25 and 30.

Mr. SCHERER. Over what period of time?

Mr. LEONARD. Over a little over 2 years.

There is another company at Los Angeles, which participates in this move as well as ourselves, who haul one and then we haul one.

There is a larger number of them that have been moved than we really know about.

Mr. MUMMA. If you had a 16-foot clearance you would have a good bit of that expense anyhow, wouldn't you?

Mr. LEONARD. If we had a 16-foot clearance; no, sir. I believe we could travel.

Mr. MUMMA. You could go right down and never bother about it?

Mr. LEONARD. We would not have to stop with these low underpasses. With 14 or 14 feet 6 clearance in an underpass we have to stop.

Mr. MUMMA. But you would still have to have these cars going ahead.

Mr. LEONARD. Absolutely.

Mr. MUMMA. And you would probably have your two-way radio telephones?

Mr. LEONARD. Absolutely. But if you had your higher clearance we would not need to stop. We could go on through if we had 16- or 17-foot clearance. We could go through without stopping.

Mr. SCHERER. That is just the question that bothers me. You have now said that you know with about 16 feet you could handle these missiles. How do we know that tomorrow, or next week, or next month, or 3 or 4 or 5 years from now, we may not require 20 or 25 feet?

Mr. LEONARD. Congressman Scherer, I know there is a limit. Sometime we must stop in this, but so help me, in my own conscience and in my own experience I feel I would be doing my country an injustice if I told you to build these any lower than 17 feet. I feel bad about this thing. I lie awake at night sometimes worrying about it. I have been working on this program for you people here today, and it bothered me, really, concentrating on it, and thinking what we were getting ourselves into, even with a 16-foot clearance.

Mr. BALDWIN. Could I ask a question, Mr. Chariman?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Mr. Leonard, you say you recommend a 17-foot clearance, but if I understand you, you have just been handling this kind of missile for the last 2 years—1958 and 1959. Therefore, I take it in 1956, when this Federal Highway Act was being passed, that at that time you would not have been able to make such a recommendation to us. Is that correct?

Mr. LEONARD. We would on the commercial end of it, sir.

Mr. BALDWIN. On the commercial end?

Mr. LEONARD. On the commercial end. I don't need just the Atlas missile or the missile program to say I would recommend a 17-foot clearance. We have items we move for commercial houses and people other than the Government which require 16- and 17-foot clearances.

Mr. BALDWIN. Of course, it would have been up to the Congress in its judgment to determine whether to go to the additional cost of providing clearances for certain limited commercial needs.

Mr. LEONARD. Yes.

Mr. BALDWIN. I take it, as of that time, you would not have been able to make a recommendation for 17 feet as far as defense needs were concerned, in 1956?

Mr. LEONARD. I don't believe I would have said 16 or 17 feet at that time. I wouldn't have felt as strongly about it as I do today. No, sir.

Mr. BALDWIN. That was 4 years ago. How do we know that you, sitting there, can tell us what is going to be the need 4 years from now?

Mr. LEONARD. I do not believe any of us can do that, sir. It is hard to say because we are already talking about space vehicles which will exceed 16- and 17-foot height needs. We are transporting and being asked to transport equipment today for the same program which are 18 feet in diameter. We have requests from the Government, which we are turning down occasionally, to move 15- and 16-foot high loads, which in my opinion are necessary, and it is costly to the Government.

Mr. SCHERER. From what you say, Mr. Leonard, that means that we may have to build stronger roadbeds, may it not? Do we have to raise the standard of roadbeds?

Mr. LEONARD. I don't believe the roadbed is so much the problem. In my experience we have worked out a good formula. With the experience of using them on the roadbeds themselves, if they are properly maintained.

Mr. SCHERER. What about the strength of the bridges?

Mr. LEONARD. I heard them talk about a formula this morning. I don't know exactly what the formula is for the bridges, but some of the very heavy items are occasionally moved across our bridges which they are able to withstand.

Mr. SCHERER. We will not know what the requirements might be in another 4 years as to height and as to strength of bridges, and as to the thickness or strength of the pavement.

Mr. LEONARD. I would say in 4 or 5 years we would not know, but I would say my good judgment is today that we will make a mistake, and definitely, if we do not go at least and raise our heights to 17 feet at this time, and to accommodate these heavy tanks. The Government is building 50- and 60-ton tanks.

Mr. SCHERER. What is the actual weight of some of these loads you carry?

Mr. LEONARD. The weight on the Atlas is nothing to be concerned with on that.

Mr. SCHWENGEL. What is the weight on one of those?

Mr. LEONARD. The overall weight with tractor and transtainer and container in a commodity like the Atlas will usually weigh somewhere in the neighborhood of 55,000 pounds. All of them together, gross weight.

Mr. MAY. That missile is transported without the fuel, Mr. Leonard.

Mr. LEONARD. That is true. I was just giving you what it is.

Mr. MAY. When we get into the solid fuel propellant missiles, the weight might become a factor.

Mr. LEONARD. Yes, sir. That is true.

Mr. SCHERER. Then we would be faced with increasing the strength of bridges and the thickness of pavements to carry these loads, would we not?

Mr. LEONARD. Yes, sir. We would be faced with that problem because we must have bridges to accommodate these things in case of an

emergency, where you are going to have to get them moving regardless of size and weight.

Mr. SCHERER. What is the limit of weight on one axle today? 18,000?

Mr. LEONARD. The average weight set by the standard is 18,000 pounds per axle.

Mr. SCHERER. Per axle?

Mr. LEONARD. 18,000 pounds per axle.

Mr. SCHERER. Do you feel that is sufficient?

Mr. LEONARD. I do not. In Florida we have——

Mr. SCHERER. Do you feel it is sufficient? Are you talking about military requirements or commercial requirements when you say 18,000 is not sufficient?

Mr. LEONARD. No, sir. I do not feel for either it is sufficient, if you want me to tell you the truth about it. It absolutely is not sufficient.

Mr. SCHERER. That is what I want.

Mr. LEONARD. We transported a great number of Army tanks recently from Fort Stewart, near Savannah, Ga., to Alabama, and they grossed out around 22,000 pounds per axle, and we had 8 axles under the load.

Mr. SCHERER. Of course, that would mean then that if this thing keeps on increasing we are going to have to consider higher geometric standards for pavement thickness and bridge structures, etc.

Mr. LEONARD. Yes, sir.

Mr. SCHERER. Have you any opinion on the charges that have been made both in and out of Congress that the geometric designs are too great now? That our rights-of-way are too wide and our median strips are too wide, and we are wasting money on this program because we have overdesigned these highways?

Mr. LEONARD. Mr. Congressman, we are designing highways here, or you are, to meet needs up to 1975, I heard the man say this morning.

Mr. SCHERER. But you heard of these charges that are being made, have you not?

Mr. LEONARD. I guess I have.

Mr. SCHERER. Everybody has who is in the business has heard of these charges.

I understand from your testimony then that our geometric standards are too low rather than too high?

Mr. LEONARD. Yes, sir.

Mr. SCHERER. Considering what we are facing by 1975?

Mr. LEONARD. Yes, sir. You, nor I, neither one, nor the Congressmen sitting here today, can control what the manufacturers and the public are going to demand in the way of commodities to transport over the highways. And if we don't build our highways and raise our sights to what we are going to need by 1975, it will be like a Chinese wall circumscribing the entire Nation, and there will not be any gates for us to get out of this Chinese wall either, if we don't put our sights to the fact that we are going to need adequate highways.

Mr. SCHWENGEL. Mr. Chairman.

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. How many miles did you transport that shipment?

Mr. LEONARD. Approximately 2,500.

Mr. SCHWENGEL. How many bridges or problems were there in that route?

Mr. LEONARD. Just a minute. I have not been on an actual move. Let me ask Mr. Ozburn here, who accompanied the shipment nine different trips. Maybe he can give it to us approximately. I am sure he does not know exactly.

Mr. OZBURN. I have not taken an actual count, but they are numerous.

Mr. LEONARD. Numerous.

Mr. SCHWENGEL. Is it 25, or 100, or 200?

Mr. OZBURN. I would say that they are nearer 200 as an estimate.

Mr. MUMMA. And you do it in 9 days?

Mr. OZBURN. You asked for bridges and underpasses?

Mr. SCHWENGEL. Yes.

Mr. OZBURN. I would say at least 200.

Mr. LEONARD. 2,500 miles is a long ways to go, and every time you go across a little stream, or a big or little river, you have a problem. Just running across Louisiana and Mississippi there are a great number of them in there.

Mr. SCHWENGEL. Have you given thought to this question: Should this cost be charged to the motoring public, the cost of this improvement, or should it be a national defense expense to come out of the national defense budget?

Mr. LEONARD. Well, it is called a national defense program, I believe. Is that right? Or a defense highway system. My opinion is, right now we had better concern ourselves more with the defense problems than anything else, of course. I believe that we have an enormous amount of gasoline tax we are paying presently, and we are paying our surtax on the purchase of vehicles and tires. There is a great deal of tax being collected for that purpose, but we know it is not all being used for highways, and there is nothing we can do about that.

Mr. SCHWENGEL. In view of the advantage that this would be to the trucking industry, should they carry a larger percent of the increase than the motoring public?

Mr. LEONARD. Would you state that again?

Mr. SCHWENGEL. I say, in view of the fact that it is evident that the trucking industry really benefits most and profits more from this, should they pay a larger percent than the motoring public? Should it be paid by more gasoline taxes, or by some increase of our other present taxes?

Mr. LEONARD. You know that any answer I give you is going to be a biased opinion on that, because I am in the trucking business. Personally I think we are paying an awful lot of taxes presently. We don't get very many miles on a gallon of fuel. Maybe anywhere from 4 to 7 miles per gallon at the very best, and there is a big Federal tax and State taxes, and in some of the States we pay an additional mileage tax, like in Florida, where we pay a cent and a half a mile for every mile we operate the trucks.

In addition to that, any amount of tax you are going to throw on to the commercial vehicles, such as trucks, in the end will have to be charged back to the public. The Government and the public will have

to pay it. So you are just robbing Peter to pay Paul if you increase your tax on the trucking people. They will have to charge it back to the public anyway.

Mr. BALDWIN. Will the gentleman yield?

Mr. SCHWENGEL. I yield.

Mr. BALDWIN. Then I understand although you feel your clearances should be increased, you do not believe the trucking industry should bear any portion of the increased cost?

Mr. LEONARD. I did not say that. I said I thought we were carrying an overabundance of the taxes. I did not say we should not pay our share of it. I am not a tax expert.

Mr. CLARK. Did you say whether or not the trucking industry should pay alone for the national defense program? Is that what you said?

Mr. SCHWENGEL. No. I said, Do you not think they should pay a larger share than the motoring public?

Mr. CLARK. Let me say for the record, if this is a national defense program, and certainly it is on the transportation of defense products, missiles, and tanks, and so forth, then I feel this way about it: The Federal Government should be the one to pay the tax on that and not tack it on to either the railroads or the trucking industry. I feel this is not the time for us to be bringing up that subject. In 1955, as some of you may recall, I said at that time, and I told the Federal Bureau of Public Roads, that we were going to be getting into a problem shortly on the bridges or underpasses and overpasses. I recommended at that time to the Federal Bureau of Public Roads that we set 33,000 pounds per axle weight. I felt sooner or later we were going to get into this problem, and right now it is shoved down our necks.

Nothing was done in 1955 to assure us we would be out of this problem that we are facing today. Certainly I recommended also that we have an 18-foot or a 20-foot clearance on all of our Interstate Highway roads, and today we are faced with that problem.

I think it is time that it is brought to light that these things which were recommended back in 1955 are now being shoved down this subcommittee's throat, and something should be done about it. I feel now is the time to do it, and not 5 years from now, when we will need it much more than we need it today. Now is the time for us to increase it. Otherwise it is going to cost us billions and billions of dollars more, and we are going to have more underpasses and more overpasses that we are going to have to reconstruct. So today is the time for us to get into this. Otherwise it will cost us many, many more billions of dollars than it will if we do it today.

Mr. BLATNIK. May we proceed with the hearing? These are all very pertinent and relevant points that are being raised, and tentative conclusions that are being made. We hope that we can confine the hearing to facts and to the problems that have been brought up in the past 2 years in order that we may be able to discuss the matter of cost allocations, and adequate dimensions in designs and standards involved.

Mr. Leonard, the statement was made that the time consumed in transit by an Atlas missile from point of origin to destination is 90 days?

Mr. LEONARD. Nine days.
Mr. BLATNIK. Nine days?
Mr. LEONARD. Nine.
Mr. BLATNIK. I thought it was 90. For what distance?
Mr. LEONARD. Approximately 2,500 miles.
Mr. BLATNIK. 2,500 miles?
Mr. LEONARD. 2,500.
Mr. BLATNIK. What was the transportation cost?
Mr. LEONARD. That is in the neighborhood of $12,000 per trip.
Mr. BLATNIK. To whom is the transportation cost charged?
Mr. LEONARD. You and me. The Government, sir. Excuse me.
Mr. BLATNIK. Counsel, may we proceed with the other types of equipment? Are you prepared at this stage to proceed?
Mr. MAY. I would like to, Mr. Chairman.
Mr. Leonard, do you have some slides showing other types of equipment which also present problems?
Mr. LEONARD. Yes, sir.
Mr. MAY. Could we see some of those?
Mr. LEONARD. If you please, sir. This is the Titan missile here, which was moved from Cape Canaveral to Denver, Colo. It is approximately 13 feet in height and about 55 feet in length in that section.
Mr. MAY. Mr. Leonard, is that the Titan missile?
Mr. LEONARD. The Titan. Yes.
Mr. MUMMA. To Denver, or from Denver?
Mr. LEONARD. This was moved to Denver. Of course, this particular move was in the opposite direction from the use, but I remember this particular move. You will note this here.
Will you point out the low tires, Ed? You have a 10-inch tire which was used to make it come within the 13-foot height limit. Considering the length involved, we must get it down to 13 feet in order to get it under some railroad underpass. A 10-inch tire is not good for traveling over highways. On automobiles you have 14-, 15-, and 16-inch tires. It also necessitates making your brakes smaller, which, for a load of this size, was not good. Also, it necessitates your making your bearings inside your wheels smaller, which causes a disadvantage in transportation and slows you down. But it is all brought about, or one of the reasons for bringing it about, is to be able to go under some of the underpasses.
If we put it up on a regular-sized trailer it will possibly be 15½ feet in height.
Mr. MAY. Did you design that trailer, Mr. Leonard?
Mr. LEONARD. No, sir; I did not. It belongs to the Glenn L. Martin Co., and I think it was designed by North American Aviation Co.
Mr. SCHERER. Does this missile and the Atlas previously shown use solid or liquid propellant?
Mr. LEONARD. I am not an expert on that.
Mr. MAY. Liquid propellant.
Mr. SCHERER. You say liquid?
Mr. MAY. Yes.
Mr. SCHERER. If we go to solid propellants, the size of these missiles will decrease, will they not?
Mr. LEONARD. I could not tell you, except we are told from time to time that the sizes of them will increase. I do not know why.

Mr. SCHERER. Increase when we use solid propellants?

Mr. LEONARD. I do not know the reason why except in this case, as Mr. May explained, where they had put on this little guidance engine, that increased the height by approximately 2 feet there.

Mr. MAY. Mr. Leonard, the construction of this trailer brings up this point: Has anyone from the military approached you to gain some information concerning the knowledge that you have acquired in making such moves?

Mr. LEONARD. They do approach us from time to time, and we have worked with them. In this case we advised that they increase the size of the tires so that they could do these other things, and develop a better trailer, but it was impossible to do so because of the underpasses involved. But they do work with us on that—the aircraft people.

Mr. MAY. I was thinking of the military people and people from the Defense Department. Have they contacted you?

Mr. LEONARD. Not—most of the time you will find it is the contractors themselves that will contact us for that purpose.

Mr. MAY. Thank you.

Mr. LEONARD. This is the Regulus missile, a Navy missile used from Fort Worth, Tex., to Norfolk, Va., and which loads about 13 feet high. We have lowered the height by tilting the load. You will note here this is tilted.

Those are wing sections protruding through the trailer to the part above it. We use the system of tilting loads to gain on our height, but there is a limit to it because we cannot continue to tilt too much.

This is a Navy helicopter moved from Key West to Jacksonville, Fla., which had fallen into the ocean and had to go to Jacksonville for immediate attention so as to keep it from oxidizing, or something which happens to aluminum when it falls into salt water; but it is approximately 15 feet high here. We have some boards over the top to prevent any contact with low wires, so that they will slide over, and also to protect the load.

We have a bridge between Miami and Key West, 15 feet 4 inches high, and there are some loads we have not been able to haul for the Navy between Miami and Key West because of that. We had to use barges instead, which is slow and expensive.

This is the same Navy helicopter.

Here we have improvised a specially built trailer, one we designed for ourselves, and brought the bed of the trailer down to 8 inches off the ground. It extends between the wheels in back. It is not always possible. In this case we could let it extend out the back when it was a light load, but when it is a heavy load we cannot extend between the wheels because we must have dual tires instead of single tires. We have a tandem axle with single tires here.

Here is the same trailer, or one exactly like it, used for transporting a wing. I have an idea this is the one we moved from South Carolina to California. You will notice it is also sitting between the wheels and extending out the back end. They must move in a hurry. I am sure we would not have had the job if time had not been of the essence. It is not always possible to have these trailers available right at the point of shipping, but we do have a number of them, and the other heavy haulers in our category of business also do. But they are not

always available, and with your higher underpasses, or vertical heights increased in height, we could do a better job of transporting this.

Some of these newer wings would need 16 or 17 feet height even tilting them, on some of our bombers, in order to move, they are so expensive that they cannot locate them over various points of the country. The Air Force restricts themselves to one or two spares on the large bombers, and they must be transported in a hurry if one of the wings are damaged. They cannot wait for either rail or water transportation. I do not know what they are going to do with them, but we have been called several times to transport them, and needed 16 or 17 feet for clearance, approximately, to get them through.

This is a large boiler which, incidentally, we used to move in smaller pieces, but the manufacturers and the users of this equipment have required that they be made in a one piece commodity on the spot of the manufacturer. This loads approximately 17 feet high. It was unloaded from a barge because a barge was used as much as possible, and transported by this truck about 17 miles.

This type of trailer is built deep because of the height. Here you see we have increased the number of axles to distribute the weight and protect the roadbed. This we do whenever possible. This load is about 15 feet wide and as I said, 17 feet high.

Mr. BALDWIN. May I ask a question? Is this something used for national defense?

Mr. LEONARD. This went into the Pratt-Whitney plant at United, Fla. There were three of these boilers. It is just outside of West Palm Beach. They are in the middle of development and experiment for the Air Force of the Government. It is a large defense plant.

This same boiler is being transported across this overpass. Underneath this overpass is a road which no doubt is leading into one of the local towns—Stuart, Fla., or Fort Pierce. You build these overpasses for the Federal road, or main artery road, but when you make a low underpass you are immediately stifling travel from the local area. So you must be concerned in the transportation of the local area in building highways, as well as the main artery highways. As we said before, in building our Interstate System, where you have overpasses leading off or over it, it is cutting off the height accessibility of the roads which you parallel.

Some of the secondary roads we were using before, we are not able now to use because the overpasses extending over the road you are paralleling have caused us to lose the use of it too.

Mr. BALDWIN. Mr. Chairman.

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. On that, to the best of my knowledge the Bureau of Public Roads never insisted that any State lower the standards that it already has. In other words, the Bureau of Public Roads simply said that the State, in building to the Interstate System, must meet certain standards, but if the State wants to go beyond them there is no requirement that it cannot.

To the best of my knowledge, the Bureau of Public Roads in building any of these systems would not force the State to lower its maximums below the maximum any State already had. So I do not follow the argument.

Mr. LEONARD. I agree with you that maybe the States should do something about the roads, but at the same time if the Federal Government will set standards at 15 feet, or 16 feet, or 17 feet, I am sure most of the States will maintain the minimums set by the U.S. Public Works or Public Roads Department, or whoever is setting the standards.

Mr. BALDWIN. So to be very clear you are certainly not insisting that the Bureau of Public Roads told any State to lower their standards?

Mr. LEONARD. No, sir. I don't want them to lower them. I am arguing for increasing them. I do not want them to lower them. No, sir. This is a large dragline here, which was used in road repairs and building of roads in south Florida. It was loaded onto what we call a lowboy, or dragline trailer. The highest point is 15½ to 16 feet in height. We have taken off the cats or the treads on which the dragline travels, to lower the height, and dismantled it as far as possible in this case to do that.

Also, we decreased the weight, but the main thing we are concerned with is lowering the height.

Mr. MAY. You might explain why you could not decrease the bed of the trailer.

Mr. LEONARD. On a trailer hauling a load of this weight we must use about a 14-inch I-beam down the center. We must maintain clearance above the road with these beams of approximately 12 to 14 inches, so that we will not hang up on a bump in the road; or, when passing over some of the railroads where they are a little higher than the the rest of the road in a sort of a hump affair. Of course, the heavier the load, the deeper the beams on which the trailer is made, must be. So that naturally increases the height of the load.

This is a transformer which is moved for one of the power and light companies in the State of Florida. At the top, which some of you will notice immediately, we have the insulators. The purpose of that is they were not removed before transporting. These will be sitting in one of our power and light companies storage yards and one of them will blow out, if somebody overuses power, or when an excess amount is used at any particular time. Then they have that trouble.

So this transformer must be as near as possible ready for use so as to make power immediately available not only for homes, but in some cases a hospital, or defense plant, or commercial plant. I know it sounds bad that these insulators must be up there to increase the height, but it takes from three to four hours to install insulators on top of a transformer after they are put in the bank. Therefore they must keep them in readiness in case of an emergency if one blows out, because you wouldn't want your home, or plant, or hospital without electricity; or if we had them in a defense plant area.

This shows the using of a secondary road here to transport a load which is approximately 16 feet in height. It is another transformer that is moved from one of our power and light companies in the State of Florida. We are using what is known as dollies to pull this one. It is a heavy one. We have 64 rubber tires so as to distribute the weight and save the road. We do this because we are conscientious about the fact that thees roads must be protected. That is why we

use more and more of these tires. At the same time these dollies will weigh about one-quarter as much as will a heavy trailer-tractor unit. So we save weight there and distribute the weight of the load.

We use this secondary road. Where we are coming over the secondary road with low underpasses off main arteries of the Federal highways, it will hinder us from using them if we do not maintain the proper height of the roads paralleling the Federal highways.

Mr. SCHWENGEL. Do you classify this as national defense material?

Mr. LEONARD. In Florida, if you wanted to stretch it out to include national defense we could, because if it is being moved in Florida, we have any number of national defense plants working in that area. It could be some of both—both commercial and national defense.

(End of slide presentation.)

Mr. BLATNIK. May we have the lights, please? I think we had a good sampling of oversized, or outsized military pieces of hardware, as well as large commercial or industrial pieces of equipment which are necessary not only for commercial industry but also industry relating directly and indirectly to defense.

Mr. May, do you have any further questions?

Mr. MAY. Yes, Mr. Chairman. Mr. Leonard has prepared a statement, together with some attachments which we would like to make an exhibit at this point.

(The document referred to appears in appendix on p. 414.)

Mr. MAY. Instead of going over it in detail, I would like to ask Mr. Leonard just a few questions about it.

Mr. Leonard, on your exhibit A, page 3, I understand you have made a survey of some of your offices and other people in the business, and you received back certain replies relating to this vertical clearance problem. I wonder if you would read at the bottom of that page what you were told by your Los Angeles, Calif., terminal.

Mr. LEONARD. All right, sir, that is on exhibit 8, page 3 of paragraph 4, from the Los Angeles foreign area terminal, Leonard Bros. Transfer.

As a rule, California is very good about planning far ahead on all new highway construction, particularly on main throughfares. All other passes are from 17 to 20 feet in height. There are some exceptions, however, and the attached letter is a glaring example of this.

Alternate 101 between Long Beach and Los Angeles is a part of the established route through which the Atlas travels from San Diego to Vandenberg Air Base, an operational base.

A base that is supposed to remain in constant readiness. You can also manage the time lost so we have a route through Los Angeles area and we have a copy of that letter attached.

Mr. MAY. Would you read the letter attached?

Mr. LEONARD. Yes, sir.

I have been advised a pedestrian overpass—the one that the people walk across, pedestrial overpass—has been built on alternate 101 between Long Beach and Los Angeles with an overhead clearance of 13 feet, 6 inches. This overpass will have to be detoured on any missile moves in the future. It is requested that the above be taken into consideration when obtaining State highway permits, also that your convoy supervisors be advised.

That is signed by Weapons Transportation Agent, S. E. Johnston, and there is a copy to our terminal manager Joe Denk at San Diego, Calif.

Mr. BALDWIN. May I ask a question? Do you know what type of highway that alternate 101 is? It is not a Federal Interstate Highway, is it?

Mr. LEONARD. I am not sure that it is. I can't tell completely myself as a layman to this work which are the Federal and which are not. I will be frank with you that I have no way of determining which is which. Unless it is a U.S. highway so and so, that would be the only way I would know whether it is a Federal highway or not and that would not mean it was one of the Federal aid program, would it?

Mr. MAY. The point is if it is built in one way it might cause a greater difficulty——

Mr. LEONARD. Oh, yes, sir, just a pedestrian walk which seemed inconsequential to someone in the highway department in keeping the pedestrians from crossing over the highway itself, they built this pedestrian crosswalk, but they might as well have them all along the highway as just have that one, because it will detour that particularly well-built road.

Everything else is 17 to 29 feet in height except this one 13-foot 6-inch pedestrian walkway. I might say for California, they have a wonderful program out there in most respects.

Mr. MAY. On the following page you have some information set forth via your Miami terminal. I wonder if you would read from the second paragraph down.

Mr. LEONARD. That is on page 6, section 5, about the middle of the page.

All the heavy equipment destined for the keys or Key West must be moved down on barges because the bridges on U.S. 1 are not strong enough and the best overhead clearance is only 15 feet, 4 inches on one bridge. For light loads, the cost of a barge from Miami to Key West is about $1,800 plus the cost of hauling to the barge, loading, unloading and hauling to destination at Key West.

You know we have the large Navy installation at Key West which is national defense and affected by this.

Mr. MAY. Would you continue on with this?

Mr. LEONARD (reading):

On January 15, 1960, we were requested to move an airplane from Warren, Ohio to the Air Force base, Mobile, Ala. This airplane is 52 feet long, 6 feet 6 inches wide and 14 feet feet high. It is a jet fighter which was to be repaired. Due to low overpasses, we don't know if we can move it or not. We have quite a few calls for this type of move.

We had a call in late December 1959, from the Baldwin-Lima-Hamilton people at Eddystone, Pa., to move a ship propeller to New Orleans, which was 20 feet in diameter. With tilting, on our special prop jig, we could get it down to about 16 feet high and 16 feet wide; but due to low bridge clearances, we were unable to move it.

We also had a request from Eastern Airlines, Miami, to move an aircraft wing panel from Lockheed Aircraft Co., Burbank, Calif., to Miami for a disabled aircraft. The wing panel was 43 feet long, 19 feet wide. If placed in a cradle in a tilted position, it would be approximately 15 feet high. However, due to low bridge clearances, we could not move it. This item had to move to the Port of Los Angeles, then via ship to San Juan, P.R., then transferred to and sent by ship to Port Everglades, Fla. From Port Everglades it went by barge to a point on the Miami River where we unloaded it from the barge and hauled it to Eastern Airlines at the Miami International Airport.

Mr. MAY. Following that page, the middle of the page?

Mr. LEONARD. The following page, page 8.

Mr. MAY. You had some information from San Diego Terminal. Would you read figure 1 down?

Mr. LEONARD. This is from the Leonard Bros. Transfer, San Diego Terminal.

The San Diego area is serviced by two interstate highways. U.S. 101 and U.S. 80. After checking out these highways, and through personal experience and after receiving advice from local heavy carriers and State and city highway departments, I find two drawbacks:

1. A railroad underpass on the southbound lane of U.S. 101, approximately 1 mile north of Oceanside, Calif., or approximately 41 miles north of San Diego. This underpass was built in 1926 and at present is 14 feet 1 inch high. In order to bypass this underpass, a load would have to be rerouted, using Los Angeles County area as an example, almost to Riverside and then south onto 395, a distance of approximately 100 miles.

2. A railroad underpass on U.S. 80, approximately 6 miles west of California-Arizona line. This is called the Araz underpass.

It was built in 1929 and is now 14 feet 5 inches high. In order to bypass this, a load would have to be rerouted using a point east of Yuma as an example, through Phoenix, Blythe, Indio, and Riverside, and then south onto 395 to San Diego County area, a distance of approximately 150 miles longer.

Mr. MAY. Mr. Leonard, about the time of the opening of the St. Lawrence Seaway, were you asked by the Navy to haul some propellers?

Mr. LEONARD. Yes, sir; unfortunately, when we had our big shebang up there, the Queen of England visited us for the St. Lawrence Waterway opening—I understand Navy had some destroyers in the Great Lakes area and because of the crowded shipping, some of the ships got over to one side and hit a rock and got out of channel and about four messed up their propellers.

The Navy called us in a hurry to transport these propellers from Norfolk to Milwaukee where they were placed on these ships.

Now, it is our understanding the Navy no longer carries spare propellers with them and when they mess up one propeller and damage it and have to replace it, they must go to their storage yard and have one transported from there to the point where the ship is waiting. They cannot ship it by water, they can't ship it by rail, because it would be too long. It is tying up your Navy's equipment which is very expensive.

Now, we move these for them; we fortunately had some specialty equipment, very low equipment in the yard, but it took us about a day to have them coupled in to the trailer in such manner that we could get by with 14 foot height.

The loads were a little less than 14 feet, but you can't always find these particular type of trailers at a point where they are needed and it will cause a delay to get them there, but with a higher clearance, you don't have this problem as much.

Mr. MAY. Is it your understanding that the Navy has other propellers that would be quite a bit higher?

Mr. LEONARD. Oh, these were small ones in comparison to some of them. They go as much as 20 feet in diameter, the propellers themselves. Now they can be tilted to approximately 16½ feet when they are tilted on our special tilt rig transporting both propellers, we can decrease the height when loaded to approximately 16½ feet.

Mr. MAY. This is significant, Mr. Chairman. This morning we heard testimony that in February of 1957, the Navy stated that 14-foot vertical clearance would be adequate.

Mr. Leonard, could you sum up briefly your thoughts about this problem?

Mr. LEONARD. I prepared a little written statement here, if you gentlemen will bear with me and I would like to read it because I am really concerned about this thing and I do not want to leave it to my trying to tell you.

My experience with it has caused me to be concerned, having had the experience of being asked to transport these many items throughout the years and I can see the multitude of them that are continuing to come in more and more every day.

I can state unequivocally that the most dangerous hazards in moving large and expensive equipment are the inadequate highways with low railroad bridges and crossroad overpasses with unrealistic clearances over the highways of our land. These unrealistic clearances are now hampering the transportation of high machinery and especially aircraft components and will eventually prohibit the transportation.

As our military and economic power grows, the things we manufacture to achieve these favorable results are getting wider, higher and longer.

As a result it would not be unreasonable to forecast that unless our new roads and overpasses are built to handle these new overdimension objects, we will be building expensive highways and bridges which will literally and actually be a Chinese wall without openings in and about our Nation. Stifling the growth of our economy and providing aid and comfort to any potential military aggressor by effectively cutting off access of military machines from the point of production or storage to their point of utilization.

In the event of bombing, rescue and salvage teams and large reconstruction equipment will be blocked off from the damaged areas.

Only 2 years ago the concept of raising clearances to 14 feet looked like a progressive step in the right direction. But it is a fairly safe assumption that within a few years we will have cause to regret that we did not anticipate our problems and raise the clearances to 17 or 18 feet. Already new road construction with its too low overpasses is creating difficulty when crossing over the old highways or even secondary roads, where we had no problem before.

In other words, the new construction is actually cutting down the accessibility of the older roads. I explained that, or tried to, where the overpasses of our old highways, or as we showed in the picture, are decreasing the utilization of our old roads. I realize these new higher clearances will cost more than the present specifications of 14 or 16 feet. I know the taxpayer is groaning now because of the load of taxes he is presently carrying, but the cost of building these new overpasses properly now will be far less expensive than having to dismantle and rebuild them a few years later to the specifications the Department of Defense and American industry will have to recommend.

In conclusion, I believe there should be a closer formal liaison between road planners, road builders, the Department of Defense, the motor transportation industry, and representatives of American industry in order to avoid highway problems of this type in the future.

Mr. BLATNIK. Thank you, and your associates, Mr. Leonard, for a very informative, instructive, and helpful presentation. Any further questions?

Mr. MAY. No, Mr. Chairman.

Mr. BLATNIK. One last question, Mr. Leonard.

You recommend better liaison with the various agencies. Have you ever made or been called upon to make any detailed reports such as you made here to us on the problems which you encounter in transporting these large oversized objects across the country?

Have you been to any officer or official or regular employee of the Department of Defense?

Mr. LEONARD. The people that I have spoken to, are the ones I have come in contact with. I have not, say, gone to the Pentagon and talked with anyone over there, because not being acquainted with them or not having that contact, I did not have the opportunity. I did speak to one of the Senators of my State about this matter some 8 or 9 months ago and told him of my concern and I have repeatedly spoken to my Congressman and to voice my opinion of it and we have tried to bring this discussion where we could.

Now, we are, I would say, in a position to be more aware of the matter or the failure of not having these roads higher than other people would be. Our industry, heavy specialized carriers, because we are the segment of the trucking industry that is asked to transport this type of equipment and we know of problems that, I might say, begging your pardon for saying it, we know of problems of transporting that is beyond the scope of the Government employees' knowledge because they say, "Here it is, boys, haul it for us." And we have the problem.

Mr. BLATNIK. I asked the question, as the record has shown already, what inquiries were made by the Chief of Transportation, those directly under the Chief of Transportation, inquiries of the services, the Navy, Air Force, the Army, what clearances would be adequate?

Now, we assume they would be familiar with the clearance problems you have had for different types of equipment that you have been hauling.

Mr. LEONARD. I guess we have been lax in the past in not going higher with our worries and maybe telling the people in the top echelon of the Government of these troubles, but I am sure that the people in the lower brackets realize the problems we are having and maybe they are failing, too, to pass the knowledge of these problems on to other people. I am not sure.

Mr. BLATNIK. Does the Navy know you had difficulty in getting their propellers up to one of their disabled watercraft?

Mr. LEONARD. Now we did not have any trouble getting them there because we did have in Norfolk several of these very low-bed trailers. They are especially built and there are not too many of them, but fortunately, we had them available.

Now we did not have the authority at that time to transport from Norfolk to Milwaukee, that is the authority from Interstate Commerce Commission, and this was of such an emergency and dire need for our special equipment for the transportation of these propellers, that the Navy secured permission for us from the Interstate Commerce Commission to do this job; in other words, we do not have authority

to transport from Virginia to Milwaukee. But they secured the authority for us so that we could make the move. There were no other carriers in that area with the type of equipment needed to do the job.

Mr. BLATNIK. You gave an example of the jetplane you were asked to transport from, I believe, Ohio on down to an airbase in Alabama. You were unable to move that equipment?

Mr. LEONARD. We were not able to move it. I suppose that if we had constructed a special trailer for it and had gone circuitous routes we might have been able to do the job, but being 55 feet in length and the plane itself, the jetplane was the lowest point from the ground up, before loading, 14 feet, so if you could load it, it would be around 15½ feet high.

Mr. SCHERER. There are always going to be objects that you could not possibly move.

Mr. LEONARD. There will always be.

Mr. BLATNIK. I am talking about when he could not move a jet at request of the Air Force, and I assume the Air Force was the agency, certainly the Air Force must have been informed of the difficulty he had.

Mr. SCHERER. You can't move a battleship no matter how big you build it.

Mr. BLATNIK. I agree but I wonder if the Navy knows it. That is the point I am trying to say, what is their liaison, what is their information, what is their communication? Did somebody bother to pick up a phone and report to the proper Navy official?

Mr. LEONARD. That part, sir, I don't know.

Mr. BLATNIK. And say it could not be moved for these reasons, clearance was not adequate?

Mr. LEONARD. All I know is my experience that I have been asked to transport these items; our inability to do so because of the overheight problems.

Mr. SCHERER. Mr. Chairman, just one more.

Mr. BLATNIK. Mr. Scherer?

Mr. SCHERER. Everyone here knows that no one has been a stronger advocate of adequate standards for highway construction than have I, so that we will be able to take care of the traffic when the system is completed in 1975. But as the witness has just said, defense and commercial products are getting higher, wider, heavier, and longer all the time.

I think we have reached time we are going to have to finally and definitely limit the width, length, weight and height of trucks. There must be some limits to this thing.

If we increase these standards, how do we know that next month or next year or 5 years they won't want to haul something still bigger and wider on these highways?

This is the thing that bothers me.

Mr. BLATNIK. That is what bothers me. That the very people who are asking that bigger and wider and higher pieces of equipment be hauled on the highways are the very same people who testified that the System of Interstate and Defense Highways was adequate and certified 14 feet was adequate.

So I am puzzled. Do they know what is happening in the field?

Mr. SCHERER. Don't we see if we increase these standards there will always be somebody that will want to haul something bigger and something heavier. There has to be some limitation eventually on the thickness of these pavements, the structural strength of our bridges and height of our clearances.

Mr. FALLON. Will the gentleman yield?

Mr. SCHERER. When they get them 17 feet, somebody will want to haul a house from California to Ohio.

Mr. FALLON. Will you yield?

Isn't it one of the facts why—one of the reasons we are having these hearings is because we were charged with overdesigning the system and it came up in a meeting in Cincinnati just a few weeks ago on a panel, one of the reporters asked me that question. And I made the statement—and I think I was pretty safe in making it—that the very people who are criticizing us now for overdesigning are going to be the people in 1975 who will tell us we did not have the foresight because we did not do a bigger job.

Mr. LEONARD. I think you are right, Congressman Fallon.

Mr. COOK. This date of 1975, I think is an important date. Aren't we finding that the overpass situation is antiquated in 1960 as far as defense machinery is concerned when theoretically under the law, the agency was charged with looking ahead to 1975 at least and providing adequate overpasses up to that period of time.

Mr. LEONARD. Congressman Cook, I would say at this time that I know that your immediate needs as of today, without forecasting any future needs, I know our immediate needs both militarywise, and commercialwise, that they should be 17 to 18 feet and no less.

As of today; I am not talking about 1975. I am talking about today.

Mr. COOK. Isn't the agency, under this statute, required to look ahead to 1975? That is the point I am trying to make.

Mr. Scherer commented on the fact that things will be constantly getting bigger and bigger; that probably is true, but under the statute, however, the agency is only required as far as the law is presently concerned to look ahead to 1975. But we are already 15 years from that date and we are already antiquated in this respect. We haven't looked ahead then to 1975 as far as the various defense agencies are concerned.

Mr. LEONARD. If she says look ahead to 1975, I would not stop at 16 feet if it were my job.

Mr. BALDWIN. Mr. Chairman?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Mr. Leonard, as I understand, your testimony is in effect official testimony of the Trucking Association because you are testifying in the capacity of vice president of heavy carriers of the Trucking Association.

Mr. LEONARD. Please understand me, I am not here in behalf of the American Trucking Associations. I am here in behalf of specialized heavy haulers conference, which is a conference of the American Trucking Associations. I am not here in any way concerned with what we call the ATA. This is strictly in behalf of our conference.

Mr. BALDWIN. I would just like to find out, to the best of my knowledge, and I sat through all the hearings in 1955 and 1956—the Ameri-

can Trucking Associations, although they participated in the hearings and testified on the Federal State Highway Act, never said one word, to my knowledge, that we should change the standards as far as the clearances are concerned.

May I further point out that we had hearings on both the 1958 act and 1959 act and to the best of my knowledge the American Trucking Associations never said one word in either year.

Mr. SMITH. Will the gentleman yield? What did we have in the bill about standards? We didn't have 2 feet, 20 feet or anything in between. It was supposed to be set. It wasn't our job to set in the bill so why should ATA or ARA or NRA have anything to say?

Mr. BALDWIN. All I am pointing out, Mr. Smith, is this: that the testimony here would indicate that this has been a serious problem for the trucking industry for a number of years and that the trucking industry hasn't even brought it to the attention of this committee up until the present time.

Mr. SCHERER. We did fix weights and widths in the act, did we not?

Mr. BLATNIK. Mr. Schwengel?

Mr. SCHWENGEL. First, I want to say you have been a very splendid witness and you have given us a lot of very worthwhile information based upon experience and a lot of deep thought and study, I am sure, and I am pleased with your testimony. However, I would like to have one question cleared up and answered if you can answer it and it is this: What percent of the total tonnage does this defense material you have been talking about represent in comparison to the total traffic load carried by the trucking industry? Has anyone ever made a study of that?

Mr. LEONARD. There are figures available for that by—I don't have them at my hand now, but they are available because they know what the total—the Interstate Commerce Commission can give you the figures as to total amount of revenue derived from all trucking, commercial trucking and on the other hand, the Government can tell you how much they have paid for their transportation, taking the two together, the two sources combining them.

Mr. SCHWENGEL. What I am talking about is the total tonnage that is affected here, where we need to have increased design standards?

Mr. LEONARD. It is not in predominant amount, of course; it is a very small percentage of the total that needs the higher clearances of which we have spoken. But on the other hand, in my opinion, utility cannot be overlooked. It is too important. It is where the minority means more than the majority or counts a great deal or carries a lot of weight, in my opinion.

Mr. SCHWENGEL. It all gets back to this, as I see it, who should carry the load and pay the expense?

Mr. LEONARD. We are only transporting these items, mostly, for the Government, these higher items and the roadbuilders who are building the roads for the Government, for which the Federal Government is paying, as I understand, 90 per cent of the cost, also have these large draglines that must move from point to point to be used for digging dirt to make your fill, and then your power and light companies have these large transformers and generators and in the long run, getting

back to this tax deal, it is going to go back to the public, so it is just one of those things, which comes first, the chicken or the egg, you see.

Mr. SCHWENGEL. You represent an association, and evidently you have in your association people who handle this type of study on transportation.

Mr. LEONARD. We have.

Mr. SCHWENGEL. Is there any way for you to get a figure for us to indicate what the total tonnage is involved here, or has been involved, in the last 2 years?

Mr. LEONARD. I don't believe I could tell you, sir. I don't know how I would go about getting it. I would be tickled to death to do it for you if I thought I could accomplish it, but it wouldn't be complete if I tried to do it myself.

Mr. SCHWENGEL. Your association.

Mr. LEONARD. I don't believe our association could get it, either. We have the trouble of some people answering letters and some don't and regardless of whether they are truckers or what they are, some of them just won't answer letters and you wouldn't have a complete picture of it. I wouldn't want to come to you without a complete picture. So, if you will excuse me from that task, I would rather not attempt it for you.

Mr. SCHERER. Mr. Leonard, keeping in mind what I said before, hasn't the history been, over the years, of continual requests for increasing the weight limits and the sizes of trucks on the highways? That has been the history and then, as we increase them, of course there is a demand for greater standards.

Mr. LEONARD. Yes, sir.

Mr. SCHERER. Now my question is: Don't we have to fix some point beyond which we can go or we are never going to have an adequate highway system?

Mr. LEONARD. Congressman Scherer, it is sort of like automation. When my father first began in the trucking business in Florida in 1925, you could only haul about 5,000 pounds to the axle and he could charge enough money to pay for the trucking transportation at 5,000 pounds per axle, so that made a gross load of maybe 6,000 or 7,000 pounds per trailer or by truck. But nowadays, in order to give an economical transportation service for the public, who are demanding lower prices, we must increase the weights that we transport and the roads themselves in order to accommodate the users who are asking for greater weights in commodities and greater sizes. It is something we can't control.

Mr. SCHERER. Now we go ahead and we build the Interstate System as we planned, or even increase the standards above what we provided in the 1956 act. How do we know that in 5, 10 years, the trucking industry and the Defense Department are not going to say to us that we must further increase the standards. Isn't that with what we are faced? Don't you think there must be some limit?

Mr. LEONARD. I think our trucking industry has been fairly reasonable. My knowledge of the workings of our trucking industry, they haven't pushed you too hard, and I will give you an example. The Federal program requires that you not exceed the weight per axle that you had in 1956, which was set, or if it was greater than 18,000 pounds per axle, you could leave it there. But they said if it isn't

18,000, then you can come up to that. Well, 18,000 pounds in Florida alone, we are not limited to 18,000 and we have not been for years and in California we are not.

Mr. SCHERER. I am willing to go along with the trucking industry but I don't want to keep on going along where the trucking industry is going to haul the heavy cargo that can be handled and should be handled by the railroads much more economically.

Mr. BLATNIK. Mr. Scherer, will you yield on that point? That is what I tried to say earlier. There are these agencies in the Department of Defense, Army, Navy and the Air Force. They are the ones that call and place an order for movement of anything related to defense.

Mr. SCHERER. I understand. I am talking about the general problem. I think all of us realize that there must be some limit set sometime on size and loads that can be hauled on our highways, or we are never going to have an adequate highway system. Who is going to pay for them or how are we going to pay for them?

Mr. BLATNIK. What puzzles me, Federal agencies concerned submit a recommendation that a clearance of 14 feet is adequate and order you to move a 16- or 18-foot piece of their own equipment. Now do they know—what I am puzzled about—do they know what is going out in the field? Have you ever been invited to make a report of your problems of moving defense equipment to any of the defense agencies involved?

Mr. LEONARD. To whom?

Mr. BLATNIK. To any of the defense agencies involved, Air Force, Atlas Missile, Air Force, Navy or to the Army?

Mr. LEONARD. Not to make any report to them; no, sir.

Mr. BLATNIK. Were you ever invited to explain why you couldn't handle an oversized piece of equipment? What your problems were with their own equipment?

Mr. LEONARD. We usually make our report to the person that asks us to make the move, that is as far as we can go with it.

Mr. BLATNIK. Beyond that you have no idea of what happens in the defense agency?

Mr. LEONARD. No, sir; I don't.

Congressman Scherer's objection a while ago that the Defense Department at this time is looking after every nickel and dime of your money that they are spending, and in every instance, if one trucking company or one railroad is half a cent a hundred pounds less than the next one, they will give it to the man that has the cheaper rate regardless. Only in those instances where it is absolutely necessary because of time, do they ship by truck. If something can go by rail, or you can save money better by rail, they never give it to trucking companies unless the essence is time.

Of course, something like these Navy propellers, if they had had time to ship them by rail it would have been cheaper but they couldn't tie up a destroyer in the lakes up there—what is it, Lake Michigan, next to Milwaukee—except for a good reason, they had to get them there. Wings and planes and things, they are looking after your money, but they are not going to give it to us except where absolutely necessary.

Mr. SCHERER. I wouldn't want you or anyone else to interpret what I said as a criticism of the Defense Department wasting money. I am

just looking at the overall problem we are facing as it relates to the hauling of defense weapons and as it relates to the hauling of commercial items. After all, as Mr. Baldwin said, the defense items are only an infinitesimal part of the total traffic hauled by the trucking industry over our highways.

Mr. LEONARD. Congressman Scherer, of course, I only know what I read in the papers—I am not like Will Rogers but I guess I can quote like he does—I only know what I read in the papers. But it is my understanding that they have said the space program is so important, they said there is no limit to the amount of money we are going to spend on it. Now they can spend billions and trillions of dollars on space programs and our missile program, but on the other hand, if we don't spend enough money to have adequate roads over which to transport these items and to do so with expeditious type of transportation, what good is it to spend billions of dollars on space programs and missile programs without adequate highways over which to transport them?

Mr. SCHERER. We'd have to transport these parts by plane.

Mr. LEONARD. The Atlas missile at present is being transported by airplane. It costs them half a million dollars to convert a C–54 to where they could use the airplane. Now when they add these little burners on to it, that Mr. May told you about, it won't go into an airplane. That is the largest one and they had to spend one-half million dollars to convert it to where it could be hauled.

Mr. SCHERER. We don't pretend to be experts; we are trying to learn, and as Mr. Baldwin pointed out, with all of these hearings we have had, nobody has come forward and told us about these clearance problems.

Mr. BLATNIK. That has bothered me, Mr. Scherer. Obviously, we will have an opportunity to question the Defense people; but these men do the work in the field. The Defense people merely order the movement. They pay for any costs. They pay for those costs, don't they?

What I am afraid of is that we are going to get to a point where we will have a splendid Interstate and Defense Highways System completed around 1975 and it will take ingenuity of civilian industry people such as these to haul military equipment in spite of the defense highway system, and that we will have to bypass it.

Mr. BALDWIN. Mr. Chairman. Mr. Leonard, are these contracts employing you to carry one of these, are they negotiated contracts or are they on a competitive bid basis?

Mr. LEONARD. They are on competitive bid basis always. All Government hauling is on a competitive bid basis.

Mr. BALDWIN. And is the contract with the Government or with the specific contractor, such as the company building the Atlas missile?

Mr. LEONARD. It is the Government. The Government pays the bill.

Mr. BALDWIN. You are negotiating directly with the Government rather than the manufacturer of the missile?

Mr. LEONARD. Yes, sir, and they keep the costs down to just as bare as they could get it for us.

Mr. BLATNIK. Mr. Leonard, we thank you very, very kindly, you and your associates.

Mr. LEONARD. I want to say in defense of the trucking industry for Congressman Baldwin, back when you had your 1956 investigation, that our industry unfortunately did not have a conference within the American Trucking Associations and that is probably why you didn't hear from us at that time. It was just at the time we were in the process of trying to get in the conference. I will try to excuse them for that reason. Thank you for listening.

Mr. BLATNIK. We hope to complete the testimony initiated early today by Mr. D. K. Chacey, Assistant Chief of Transportation for Transportation Engineering, Department of the Army.

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY—Resumed

Mr. MAY. Mr. Chacey, this morning when we halted, we had just finished discussing the fact that some 14 months after the adoption of the standards, the Chief of Transportation's Office notified the Federal Highways Administrator that it had checked into the problem and had found that the 14-foot vertical clearance standard was adequate. It then notified the Assistant Secretary for Defense for supply and logistics of the action taken.

A couple of months later, you become concerned once again about the 14-foot vertical clearance standard. Do you recall talking with Mr. Siegle of the Bureau of Public Roads at the AASHO meeting in Chicago in December of 1957?

Mr. CHACEY. I do, sir.

Mr. MAY. Did you express your concern to him at that time about 14-foot vertical clearance standard?

Mr. CHACEY. I did.

Mr. MAY. What action did you take thereafter in connection with the problem?

Mr. CHACEY. Well, if I may, sir——

Mr. SCHERER. Now, was that after the Defense Department had reported to the Bureau of Public Roads that it had made a survey and all of the departments had come to the conclusion that 14 feet was O.K.?

Mr. MAY. Yes, sir.

Mr. SCHERER. Thank you.

Mr. CHACEY. If I may, sir, I would like to comment briefly on this point. If you will recall, it was Congressman Scherer who mentioned the fact that sputnik had occurred a few days after our letter of October 1, 1957, which indicated that the 14-foot vertical clearance would be adequate. In addition to this, I believe, I know that I was very much impressed by not only this accomplishment but by the actions taken by many of our public officials and agencies which brought a greater realization to us of the potentialities of guided missiles and space vehicles. This is significant because I think it is the basis for the actions that were taken by the Chief of Transportation following that date. Up until this time we in the Department of Defense had issued regulations. As an example, on size and weight limitations, the effort was being made to keep military equipment to a size, weight

and configuration that could be moved not only in the United States but in theaters of operation in overseas areas.

We all can recall some of the areas where we have had this requirement. But with this emphasis on space vehicles and intercontinental ballistic missiles, some of us came to the realization that we had to do something other than consider movements in overseas areas. We had to consider the fact that we were now in an age in which we had two areas to be concerned with.

One, items of equipment to be moved in theaters of operation, and two, items that would require movement in the Zone of Interior only.

In addition to this, I think there was a much greater realization—I know there was on my part—of the ultimate effect of building the Interstate System with all overpass structures to a given standard, and supplementing that with our State freeway systems; and the example that concerned me greatly was the action taken by the State of California.

Mr. MAY. Mr. Chacey, you are getting a little bit ahead of the story. Could we move back to December of 1957? What action did you take thereafter? What was your first action, official action in connection with this vertical clearance problem?

Mr. CHACEY. Following that date?

Mr. MAY. Yes, sir.

Mr. CHACEY. We prepared a letter for the Chief of Transportation which was again transmitted to the military agencies.

Mr. MAY. Did you first ask for an estimate of possible costs of the Bureau of Public Roads?

Mr. CHACEY. We asked for a general indication of what this meant in terms of increased costs. We did not at that time expect to get what you would consider an engineering estimate, but some guidance as to what area we are in and where we are going in this vertical clearance problem.

Mr. MAY. When did you make that request?

Mr. CHACEY. I believe that was in—I have reference to it here in March 1958 correspondence. I am not certain of the date of the request.

Mr. MAY. I understand Mr. Erickson furnished the estimates informally about March 13, 1958. Is that not right?

Mr. CHACEY. I suspect so. I think we got it by telephone actually.

Mr. MAY. What did Mr. Erickson indicate the cost might be?

Mr. CHACEY. At this time this very general guidance that we requested. I have shown it here in a memorandum for record—which says:

> It is also understood that the cost of increasing vertical clearance to 16 feet would be about 0.25 percent of the cost of constructing the Interstate System and increasing vertical clearance to 18 feet would be about 0.57 percent of the cost of constructing the Interstate System.

Mr. MAY. Fifty-seven hundreds of 1 percent.

Mr. CHACEY. Right.

Mr. MAY. It was thereafter that you forwarded this letter from the Chief of Transportation's Office to the same branches of the military to which the original January 1957 letter was forwarded; is that correct?

Mr. CHACEY. I believe at that time we sent identical communications to everyone except the Chief of Engineers, Department of the Army.

Mr. MAY. And at that time, Major General Browning was Acting Chief of Transportation?

Mr. CHACEY. That is correct.

Mr. MAY. Did you compose the letter, Mr. Chacey?

Mr. CHACEY. I did, sir.

Mr. MAY. Briefly, what did you ask in this letter?

Mr. CHACEY. Well, briefly we tried to explain some of these problems that we felt we probably hadn't adequately explained previously, and we told them we thought there was justification in requesting them to reevaluate this problem of vertical clearance.

Mr. MAY. Mr. Chairman, may we have Mr. Chacey identify this letter and make that an exhibit?

(Exhibit 6 follows:)

EXHIBIT 6

DISPOSITION FORM

MARCH 18, 1958.

File No. TCATE.
From: CofT
To: CofORD — Comment No. 1
Subject: Highway Clearance Standards. — Frerich/71787/dit

1. Reference is made to DF Comment No. 1, TCATE (RCSI #7(c)), 15 January 1957, requesting that the geometric design standards adopted by the American Association of State Highway Officials for the National System of Interstate and Defense Highways (NSIDH) be reviewed, especially with respect to the 14-foot vertical clearance standard for bridges and underpasses. Your Comment No. 2, ORDGX-T 00/7UI 2021, 18 April 1957, indicated that the standards are considered sufficient and adequate for the normal movement of Ordnance equipment in present and anticipated use.

2. Based on comments and recommendations received from the Department of Defense agencies concerned, the Federal Highway Administrator was advised on 1 October 1957 that the geometric design standards adopted for the NSIDH were adequate for the movement of present and anticipated equipment and materials.

3. Although no objections to the standards were reported, some agencies indicated a 14-foot requirement for the then foreseen guided missiles. In addition, since the above coordination there has been a greater realization of future space flight, guided missile developments, and mobile defense.

4. Inclosed for your information is a map of the NSIDH, which includes the routes recently recommended by the Secretary of Commerce for addition to the System. This 41,000-mile System will be the network of major arterial highways to serve both civilian and military needs. In addition there will be many State highways constructed to the same vertical clearance standard.

5. There will be built into the NSIDH some 20,000 highway grade-separation structures. Approximately 10,000 of these structures will be major interchanges and many of them will be located at intersections with Federal-aid Primary routes and other routes of major importance. Because structures generally remain in use for at least 50 years, it is necessary that they be constructed so as to be adequate for long-range requirements. As grade-separation structures are completed on the Interstate System and the other major routes, it will become more difficult and ultimately impossible to move vehicles and loads that exceed the vertical clearance of these structures any appreciable distance. In addition, experience has shown that structures may not always accommodate a vehicle and load designed to use these structures. This is because future resurfacing, snow and ice accumulation, and the movement of vehicles resulting from springing action when passing over irregularities in highway pavements will reduce the vertical clearance of the structures.

6. Although some structures on the NSIDH have already been constructed, it is believed there may be justification for a revision of the vertical clearance standard in order to provide for future military requirements. If an increase in the vertical clearance standard would provide a significant contribution to the movement of future defense items, it is important that this be known at the earliest possible date.

7. It is requested that you re-evaluate the requirements for future Ordnance Corps movements over the public highways of the United States and furnish any additional comments and recommendations by 30 April 1958 on the vertical clearance requirements for highway grade-separation structures.

S. R. BROWNING,
Major General, U.S. Army,
Deputy Chief of Transportation.

Mr. BALDWIN. What is the date of that letter?

Mr. CHACEY. March 18, 1958.

Mr. MAY. So this letter asked the various branches to reevaluate their position regarding 14-foot vertical clearance. Wou'd you briefly state when these other branches replied to that letter and indicate what they said?

Mr. CHACEY. Briefly, on April 24, 1958, the Department of the Navy replied: "It is felt the 14-foot vertical clearance will be adequate."

Mr. GRAY (presiding). At what date was that?

Mr. CHACEY. April 24, 1958.

(Exhibit 7 follows.)

EXHIBIT 7

APRIL 24, 1958.

From: Chief, Bureau of Supplies and Accounts.
To: Deputy Chief of Transportation, Office of the Chief of Transportation, Department of the Army, Washington 25, D.C.
Subject: Highway clearance standards.
Reference: (*a*) OCT Wash. D.C. ltr TCATE of 13 March 1958 to BuDocks.
(*b*) BuDocks 1st End H-301C/mm N2 of 10 April 1958 on OCT Wash ltr to BuSand A.

1. Reference (a), forwarded by reference (b), as a matter under the cognizance of the Bureau of Supplies and Accounts, requested reevaluation by the Department of the Navy of requirements for future Navy movements in excess of 14-foot vertical clearance over the public highways of the United States. It is felt that 14-foot vertical clearance will be acceptable.

Mr. MAY. Will you go on, Mr. Chacey?

Mr. CHACEY. On April 30, 1958, the Department of the Air Force replied: "It is recommended that consideration be given to increasing the present 14-foot clearance standard for future construction of the National System of Interstate and Defense Highways to 16 feet."

(Exhibit 8 follows:)

EXHIBIT 8

DEPARTMENT OF THE AIR FORCE,
HEADQUARTERS, U.S. AIR FORCE,
Washington, D.C., April 30, 1958.

Memorandum for Chief of Transportation, Department of Army.
Subject: Highway clearance standards.

1. Reference is made to your letter TCATE dated March 18, 1958, subject as above.

2. There are no known approved development plans or programs that contemplate missiles or supporting equipment of such a size that would require an increase to present vertical clearance standard for the National System of Inter-

state and Defense Highways. There is some outsize equipment requiring movement over highways needing vertical clearances up to 16 feet. However, these cases are not national in scope but would infrequently occur and would undoubtedly be limited to local moves within one State. Examples of items requiring clearance higher than present standard are: Engine test chamber, 15 feet 6 inches, diameter; circuit breakers, 16 feet; and valves, 15 feet; possible equipment to be moved on Tennessee highways serving the Arnold Engineering Development Center, Tullahoma, Tenn. Similarly, a 14-foot standard could adversely affect missile and aircraft movements over the highways to and from the Los Angeles area and the Flight Test Center at Edwards Air Force Base, Calif. A review of requests for highway waivers and clearances on file at Headquarters, Continental Air Command, Mitchel Air Force Base, N.Y., indicates many were for vertical clearances from 14 feet 6 inches, up to and including 15 feet 4 inches. It is impossible to forecast the exact dimensions of weapons systems after 1970; therefore, impracticable to estimate a vertical clearance standard that would be optimum for the 50-year use expectancy of highway grade-separation structures.

3. In view of the foregoing, it is recommended that consideration be given to increasing the present 14-foot clearance standards for future construction of the National System of Interstate and Defense Highways to 16 feet.

RAYMOND L. WINN,
Brigadier General, USAF, Director of Transportation,
Office, Deputy Chief of Staff, Materiel
(For the Chief of Staff).

Mr. MAY. Will you go on?

Mr. CHACEY. On July 24, 1958, the Deputy Chief of Staff for Military Operations, Army, replied, and these are quotations from the letters, they are not the complete letter.

In view of the cost of the National System of Interstate and Defense Highways and its projected useful life of 50 years, it is believed militarily unsound to consider only presently foreseen requirements in evaluating adequacy of 14-foot vertical standard. Technology is advancing so rapidly that it is virtually impossible to predict what our military requirements will be more than 6 to 8 years from now. The space agencies already are demanding larger payloads and more powerful rocket motors which will mean larger physical dimensions than our missiles have today. Future technical advances thus could mean even larger sizes of military hardware. This hardware should not be restricted in its rapid movement over the Nation's highways in the future because of an overly conservative vertical clearance standard established today. The Department of Defense's position should include standards which provide a reasonable leeway for future requirements.

And he continued with the recommendation:

As a point of departure, at least a 20-foot vertical clearance standard be considered as a Department of Defense position in this matter.

Mr. MAY. I might quote the second paragraph on that first page where it says: "It is understood that an increased vertical clearance will not necessarily mean a large increase in construction costs provided the decision is made now." That was July 24, 1958.

Have we mentioned the reply from the Ordnance Missile Command? You received that on May 1, 1958, from the Chief of Ordnance.

Mr. CHACEY. On May 1, 1958, the Chief of Ordnance replied that a 14-foot clearance was adequate for all commands except the Ordnance Missile Command, which on April 18, 1958, had replied that: "Consideration should be given to a vertical clearance of 16 to 17 feet in order to allow for any variations in loading."

6. Although some structures on the NSIDH have already been constructed, it is believed there may be justification for a revision of the vertical clearance standard in order to provide for future military requirements. If an increase in the vertical clearance standard would provide a significant contribution to the movement of future defense items, it is important that this be known at the earliest possible date.

7. It is requested that you re-evaluate the requirements for future Ordnance Corps movements over the public highways of the United States and furnish any additional comments and recommendations by 30 April 1958 on the vertical clearance requirements for highway grade-separation structures.

S. R. BROWNING,
Major General, U.S. Army,
Deputy Chief of Transportation.

Mr. BALDWIN. What is the date of that letter?

Mr. CHACEY. March 18, 1958.

Mr. MAY. So this letter asked the various branches to reevaluate their position regarding 14-foot vertical clearance. Wou'd you briefly state when these other branches replied to that letter and indicate what they said?

Mr. CHACEY. Briefly, on April 24, 1958, the Department of the Navy replied: "It is felt the 14-foot vertical clearance will be adequate."

Mr. GRAY (presiding). At what date was that?

Mr. CHACEY. April 24, 1958.

(Exhibit 7 follows.)

EXHIBIT 7

APRIL 24, 1958.

From: Chief, Bureau of Supplies and Accounts.
To: Deputy Chief of Transportation, Office of the Chief of Transportation, Department of the Army, Washington 25, D.C.
Subject: Highway clearance standards.
Reference: (*a*) OCT Wash. D C. ltr TCATE of 13 March 1958 to BuDocks.
(*b*) BuDocks 1st End H-301C/mm N2 of 10 April 1958 on OCT Wash ltr to BuSand A.

1. Reference (a), forwarded by reference (b), as a matter under the cognizance of the Bureau of Supplies and Accounts, requested reevaluation by the Department of the Navy of requirements for future Navy movements in excess of 14-foot vertical clearance over the public highways of the United States. It is felt that 14-foot vertical clearance will be acceptable.

Mr. MAY. Will you go on, Mr. Chacey?

Mr. CHACEY. On April 30, 1958, the Department of the Air Force replied: "It is recommended that consideration be given to increasing the present 14-foot clearance standard for future construction of the National System of Interstate and Defense Highways to 16 feet."

(Exhibit 8 follows:)

EXHIBIT 8

DEPARTMENT OF THE AIR FORCE,
HEADQUARTERS, U.S. AIR FORCE,
Washington, D.C., April 30, 1958.

Memorandum for Chief of Transportation, Department of Army.
Subject: Highway clearance standards.

1. Reference is made to your letter TCATE dated March 18, 1958, subject as above.

2. There are no known approved development plans or programs that contemplate missiles or supporting equipment of such a size that would require an increase to present vertical clearance standard for the National System of Inter-

state and Defense Highways. There is some outsize equipment requiring movement over highways needing vertical clearances up to 16 feet. However, these cases are not national in scope but would infrequently occur and would undoubtedly be limited to local moves within one State. Examples of items requiring clearance higher than present standard are: Engine test chamber, 15 feet 6 inches, diameter; circuit breakers, 16 feet; and valves, 15 feet; possible equipment to be moved on Tennessee highways serving the Arnold Engineering Development Center, Tullahoma, Tenn. Similarly, a 14-foot standard could adversely affect missile and aircraft movements over the highways to and from the Los Angeles area and the Flight Test Center at Edwards Air Force Base, Calif. A review of requests for highway waivers and clearances on file at Headquarters, Continental Air Command, Mitchel Air Force Base, N.Y., indicates many were for vertical clearances from 14 feet 6 inches, up to and including 15 feet 4 inches. It is impossible to forecast the exact dimensions of weapons systems after 1970; therefore, impracticable to estimate a vertical clearance standard that would be optimum for the 50-year use expectancy of highway grade-separation structures.

3. In view of the foregoing, it is recommended that consideration be given to increasing the present 14-foot clearance standards for future construction of the National System of Interstate and Defense Highways to 16 feet.

RAYMOND L. WINN,
Brigadier General, USAF, Director of Transportation,
Office, Deputy Chief of Staff, Materiel
(For the Chief of Staff).

Mr. MAY. Will you go on?

Mr. CHACEY. On July 24, 1958, the Deputy Chief of Staff for Military Operations, Army, replied, and these are quotations from the letters, they are not the complete letter.

In view of the cost of the National System of Interstate and Defense Highways and its projected useful life of 50 years, it is believed militarily unsound to consider only presently foreseen requirements in evaluating adequacy of 14-foot vertical standard. Technology is advancing so rapidly that it is virtually impossible to predict what our military requirements will be more than 6 to 8 years from now. The space agencies already are demanding larger payloads and more powerful rocket motors which will mean larger physical dimensions than our missiles have today. Future technical advances thus could mean even larger sizes of military hardware. This hardware should not be restricted in its rapid movement over the Nation's highways in the future because of an overly conservative vertical clearance standard established today. The Department of Defense's position should include standards which provide a reasonable leeway for future requirements.

And he continued with the recommendation:

As a point of departure, at least a 20-foot vertical clearance standard be considered as a Department of Defense position in this matter.

Mr. MAY. I might quote the second paragraph on that first page where it says: "It is understood that an increased vertical clearance will not necessarily mean a large increase in construction costs provided the decision is made now." That was July 24, 1958.

Have we mentioned the reply from the Ordnance Missile Command? You received that on May 1, 1958, from the Chief of Ordnance.

Mr. CHACEY. On May 1, 1958, the Chief of Ordnance replied that a 14-foot clearance was adequate for all commands except the Ordnance Missile Command, which on April 18, 1958, had replied that: "Consideration should be given to a vertical clearance of 16 to 17 feet in order to allow for any variations in loading."

(Exhibit 9 follows:)

EXHIBIT 9

MAY 1, 1958.

ORDGY-T
GO/891 9327
TCATE
Subject: Highway clearance Standards.
To: CofT.
From: CofORD

Comment No. 2
Mr. Bask/ea/T2433

1. In order to reevaluate the situation as suggested in Comment No. 1 this office requested comments from the various commodity commands and the several divisions located within the Office, Chief of Ordnance.

2. All comments received, with the exception of those forwarded by the U.S. Army Ordnance Missile Command, expressed the belief that the proposed 14-ft. clearance would be adequate.

3. The comments of the Missile Command are forwarded as Incl. 2 to this Comment.

S. I. TENNYSON, *Assistant*
(For the Chief of Ordnance).

ORDNANCE CORPS,
REDSTONE ARSENAL,
Redstone Arsenal, Ala., April 18, 1958.

ORDIW-PATM
Subject: Highway Clearance Standards.
To: Office, Chief of Ordnance, Department of the Army, Washington, D.C., Attention: ORDGI-T.

1. Reference in your letter of March 21, 1958, file ORDOI-T, 72433 and copy of DF from Office, Chief of Transportation to Office, Chief of Ordnance.

2. The following information has been received from the mission agencies and Redstone Depot of this Command:

(*a*) Industrial Division:

This division finds the provisions adequate for the normal movement of Ordnance equipment in present and anticipated use.

(*b*) Research and Development Division:

The 14-foot vertical clearance and underpasses adequately covers the requirements for items of equipment contemplated for use in systems now is research and development by the Army Rocket and Guided Missile Agency.

(*c*) Field Service Division:

This office does not concur in the proposed 14-foot vertical clearance. Enclosed is a sketch depicting the basis for nonconcurrence. In addition with the present missile systems of 9-foot diameter, a cradle of 1 foot in height on a standard flatbed trailer (11-foot high) from highway. The proposed 14-foot verticle clearance would be used up without consideration being given to road bounce and the possibility of ice coverage, as well as normal resurfacing. This would not include future missile and/or space age equipment. Based on the foregoing, it is believed that vertical clearance of 17 feet would be required.

(*d*) Redstone Depot:

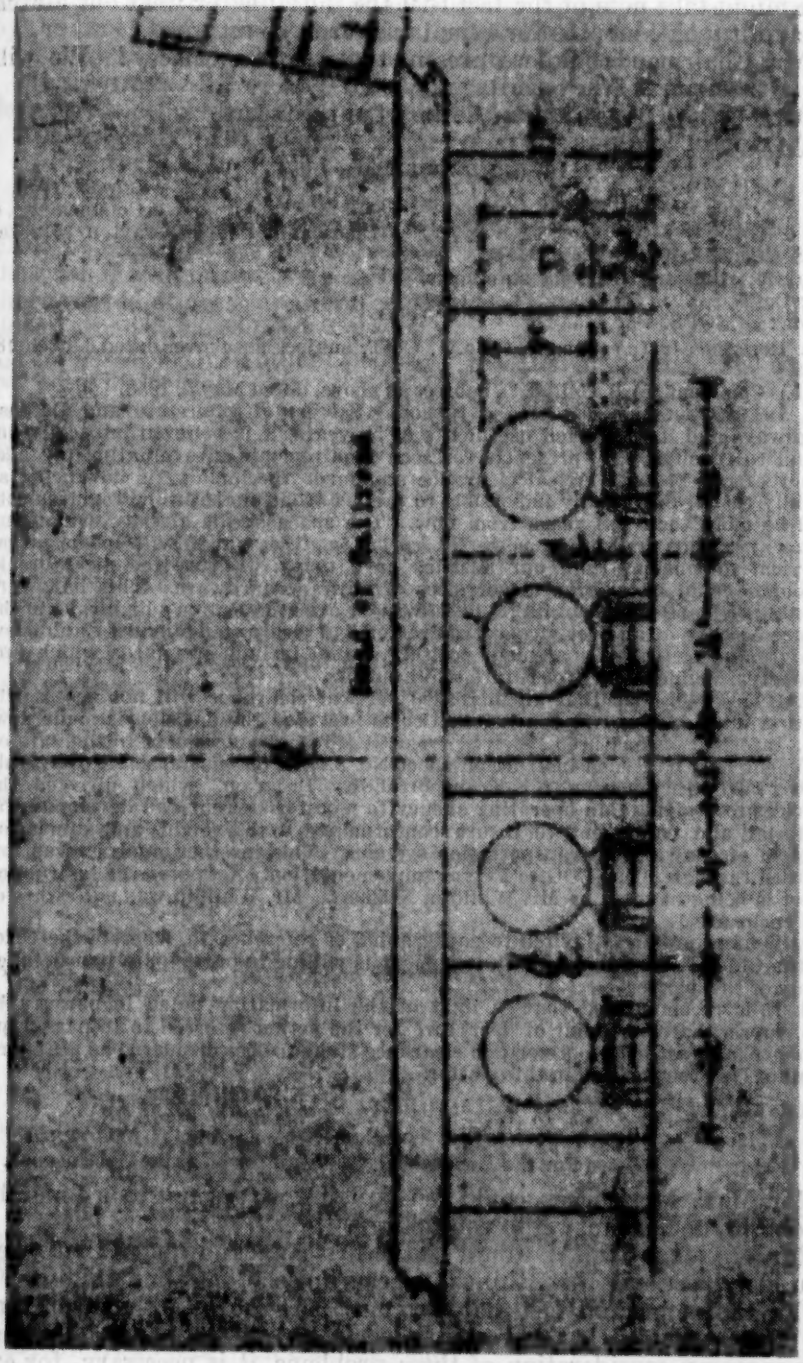
The vertical height of 14 feet on highway structures is adequate to handle the type of ordnance supplies being shipped from this depot. Future missions will involve a different type of material being stored and shipped from Redstone Depot. Although height dimensions for future material are not available, it is believed that a vertical clearance higher than 14 feet will be necessary.

(*e*) Redstone Anti-Missile-Missile System Office has been discontinued under Army Rocket and Guided Missile Agency General Order No. 55, effective April 14, 1958.

3. The information as furnished above is based on the shipping of a single item.

4. Based on information and studies now being conducted by this office, which are incomplete at this time, consideration should be given to a vertical clearance of 16 to 17 feet in order to allow for any variations in loading, that will provide for the maximum utilization of equipment.

GEORGE A. BICKERTON,
Chief, Traffic Management Office
(For the Commander).



Mr. MAY. Mr. Chacey, the last answer was received July 24, 1958. We might take note of the fact that the initial letter went out March 18 and it took 4 months for a final answer to be returned.

Mr. Chairman, could we present these to Mr. Chacey? We will make them part of the record.

Mr. GRAY. They will be made a part of the record.

(Exhibit 10 follows:)

EXHIBIT 10

July 24, 1958.
Comment No. 4
Lieutenant Colonel Crayton/75126/et

OPS CO WH 10.
Subject: Highway clearance standards.
To: CofT
From: DCSOPS.

1. References: (a) Comment No. 1, CofT, subject as above, dated March 18, 1958.

(b) Comment No. 3, C/R. & D. subject as above, dated May 5, 1958.

2. In view of the cost of the National System of Interstate and Defense Highways and its projected useful life of 50 years, it is believed militarily unsound to consider only presently foreseen requirements in evaluating the adequacy of the 14-foot vertical clearance standard. Technology is advancing so rapidly that it is virtually impossible to predict what our military requirements will be more than 6–8 years from now. The space age is already demanding larger payloads and more powerful rocket motors which will mean larger physical dimensions than our missiles have today. Future technical breakthroughs could mean even larger sizes of military hardware. This hardware should not be restricted in its rapid movement over the Nation's highways in the future because of an overly conservative vertical clearance standard established today. The Defense Department position should include standards which provide a reasonable leeway for future requirements.

3. It is understood that an increased vertical clearance will not necessarily mean a large increase in construction costs provided the decision is made now.

4. Information has been received from OCofT that subsequent to the date on comment 1, DOD issued instruction sheet No. 3224.1, dated March 25, 1958, subject, "DOD Engineering for Transportability Program" which directed the services to designate an operating agency to monitor current and developmental material and equipment to insure conformance with weight and dimension criteria of the various transportation systems. This instruction sheet was forwarded through ODCSLOG to TC for implementation. Action on the instruction sheet is being handled by Mr. Whildin, X 56963. Mr. Whildin was not aware of the enclosure 1.

5. Your attention is invited to paragraph 3 of reference 1b, wherein the Office of the Chief of Research and Development is willing to participate in a detailed study of this matter.

6. It is recommended that in light of the information noted in paragraphs 2–5, supra, that as a point of departure for the action referred to in paragraph 4, above, at least a 20-foot vertical clearance standard be considered as a Department of Defense position in this matter.

F. T. PACHLER,
Brigadier General, GS,
Director of Operations, ODCSOPS
(For the Deputy Chief of Staff for Military Operations).

Mr. MAY. Mr. Chacey, could you explain the reason it took 4 months to obtain the final answer to your letter?

Mr. CHACEY. Well, I would be the first to acknowledge that when you look back over these things it seems quite a long time. However, I think an important fact that did contribute to this is the machinery or the procedures that are established in the Department of Defense for insuring consideration of these problems, it is necessary, for example, for the people that we wrote to, to again write to someone else. I know, for example, our Deputy Chief of Staff for Operations sent

official communications to the Assistant Chief for Research and Development and to Deputy Chief of Staff for Logistics. These things, by the time they shake out an official position and state it within their own areas of responsibility, simply consume some time.

Mr. SCHERER. All of these communications to which counsel is referring took place, did they not, within 6 to 8 months after sputnik?

Mr. CHACEY. Well, we get around——

Mr. SCHERER. I mean that we have referred to so far.

Mr. CHACEY. Yes, sir.

Mr. SCHERER. And there were constant and rapid changes taking place in the thinking in the Defense Department with reference to the type of weapons we were going to use to combat sputnik? Wasn't this a period of great upheaval and indecision and lack of determination of what we should do?

Mr. CHACEY. Well, there isn't any question but what this was a period of indecision.

Mr. SCHERER. It was reflected in the executive branch as well as in Congress?

Mr. CHACEY. Everybody.

Mr. CLARK. Mr. Chairman?

Mr. GRAY. Mr. Clark.

Mr. CLARK. When you were saying that you were writing these letters and it took 6 to 8 months, are these offices that you referred to, are they in this area or are they on the west coast, or the east coast?

Mr. CHACEY. The offices that we addressed communications to are all in the Washington area. But the Chief of Ordnance, for example, had to go to Huntsville, Ala., to the Army Ordnance Missile Command. Generally they are in this area.

Mr. MAY. Mr. Chacey, you were aware that each day the State highway departments were building structures out in the field which might well prove to be inadequate?

Mr. CHACEY. That is correct.

Mr. SCHERER. We were worried about Russia sending up a larger and bigger sputnik, chiefly, weren't we?

Mr. CHACEY. Sir?

Mr. SCHERER. During that period we were worrying about Russia sending up a larger and bigger sputnik; wasn't that the chief worry?

Mr. CLARK. Mr. Chairman, I wonder, for the record, if we couldn't say this was 10 months after sputnik, roughly.

Mr. SCHERER. Wait a minute.

Mr. GRAY. Mr. Clark has the floor.

Mr. SCHERER. You said 10 months after sputnik. Sputnik came in October of 1957, and the last letter you referred to——

Mr. CLARK. This letter we are referring to——

Mr. SCHERER. July of 1958.

Mr. MAY. Ten months. Mr. Chacey, were the other people concerned with this problem also aware that structures were being built daily?

Mr. CHACEY. I believe we so stated in our communication.

Mr. MAY. I don't think it is covered.

Mr. SCHWENGEL. Will counsel yield?

Mr. GRAY. Mr. Schwengel.

Mr. SCHWENGEL. I would like to point out it is obvious they were concerned about it. I don't know why we have to ask questions about

this. I think everyone knows the building program was going forward. Certainly the Defense Department did. But isn't it true that you had more than just that to consider? I mean, you had to consider this in comparison to the total problem and also was this actually going to be needed with the equipment we were planning and also if there might not be some other ways to transport this equipment. And you discovered we had found other ways to transport these things, haven't you?

Mr. CHACEY. Yes, sir, they have seen moving. There is not any question but what, during this period, there were a lot of questions raised and a lot of discussion on what was around the corner. I don't think any of us knew what this really meant to us and I think it took us a while to realize what the future of missiles and space vehicles meant to us.

Mr. SCHWENGEL. Was there also in your thinking some idea about seeing what the railroad industry could do about this or was that of your thinking? Or did you contact those people, or were they consulted to see whether or not it might not be cheaper to improve facilities on the railroads to carry what is obviously a small percent of the total traffic for which this road is being built?

Mr. CHACEY. This is quite an involved problem. Numberwise, most of our missiles move by rail. Some of these missiles that we have been discussing here are items which, because of their sensitivity and character and such as that, are not transported by railway transportation. This is an unknown quantity as far as the future is concerned. The railroads have been very cooperative and have gone into pneumatic dunnage for us and have done a lot of research work that has gone into transportation of sensitive, hazardous items by railway transportation.

There is another important aspect of this and that is that the railroads don't always go to the place where you have to have some of these items. So, in my judgment, we must have flexibility in our transportation capabilities. These were new items.

The Atlas missile was something entirely new to everybody and so it was a matter for the science and industry and defense officials to work this problem out as best they could under the pressures that were being applied. It was an urgent program, and it was a new one and there is still a lot we don't know about it.

Mr. COOK. Will the gentleman yield?

Mr. SCHWENGEL. The gentleman from New York asked me to yield.

Mr. ROBISON. Along the lines of your mention of railroad cooperation, isn't it true that the Minuteman missile under development is being designed for use from mobile railroad bases of some sort?

Mr. CHACEY. I can answer yes, but I can't go into detail on it.

Mr. ROBISON. But this is a weapon of the future, too.

Mr. CHACEY. This is one of the weapons of the future.

Mr. BLATNIK (presiding). Mr. Cook.

Mr. COOK. Mr. Chacey, we have been talking about the so-called weapons of the future, but wasn't there some earlier testimony of other types of more modern or the usual type of hardware, such as tanks and other vehicles which were creating a problem as far as 14-foot overpasses are concerned at this time also?

Mr. CHACEY. I am sorry, but I didn't hear the first few words.

Mr. Cook. We have been dealing with the confusion that was supposed to have occurred in the Defense Department after sputnik, but I am raising a question as to other types, the usual types of hardware; tanks and other types of Army equipment, which were practically impossible to put on these cars, as has been testified, to take under 14-foot underpasses. Isn't that true, approximately in the latter part of 1957 and 1958?

Mr. Chacey. We had some of those items of equipment; yes, sir.

Mr. Cook. Didn't this cause you some concern as well as the new missile program?

Mr. Chacey. Not nearly so much, no, sir, because of the fact that you can ship them by rail and the fact that they are—you can put them on their wheels and move them. An Atlas missile you can't move except on wheels, and a special rig. So I personally felt that we were in a different ball park when we moved into the missile and space vehicle area.

Mr. Cook. But you were satisfied with the 14-foot limit then as to other ordinary equipment, modern equipment, at that time?

Mr. Chacey. The answer to that question is: I don't have that responsibility. The important point is that the people who have the responsibility for implementation and use of these weapons were satisfied with the fact that they could move them by rail, or they could move them up around the occasional overpass structure and I think that area is one that was not clearly understood by everyone. That is, as we continue to build these overpass structures, we will ultimately restrict or prohibit the type of movement which we have been so accustomed to over a period of many years for the occasional oversize movement, and that is that you can route it around the occasional overpass or other obstruction.

Mr. Cook. Do I understand that you only became concerned as to the 14-foot level with the advent of the space age and missile program?

Mr. Chacey. No, sir, that isn't correct. We introduced correspondence in 1957 to query the military departments and agencies of the Department of Defense in this area.

Mr. Cook. Then it is unfair to say that only the missile program and so-called weapons of the future were responsible for the confusion which is supposed to be legitimate confusion because of these problems, and yet there were other problems besides the future problems?

Mr. Chacey. There is no question but what other areas would benefit by an increase in vertical clearance.

Mr. Cook. In fact, since sputnik didn't go up until the latter part of 1957, you began to be concerned prior to sputnik?

Mr. Scherer. Will you yield on that very point that you raised?

Mr. Cook. Yes.

Mr. Scherer. As I understand it now, Mr. Chacey, see if I can summarize what you are telling us on this issue that Mr. Cook is questioning you about. As I understand it, prior to October 1, 1957, in the months, say, of August, July, and June, there had been some concern with reference to the 14-foot clearance that had been established under the 1956 act; and that during that period there was a complete study made by every department in the Department of

Defense; that after they made those studies, they reported to you that the 14-foot clearance was sufficient; and then on October 1, 1957, you did report to the Bureau of Public Roads that after these surveys had been made, that every agency in the Department of Defense was satisfied that the 14-foot clearance adopted under the 1956 act was sufficient to meet defense needs. And you did that because you were following out a policy which you testified to, namely, that highways which were designed to meet civilian needs would meet military requirements; that, therefore, up to this point, up to October 1, 1957, you were following that philosophy and designed military weapons in order that they could get under a 14-foot clearance.

As you pointed out, you had a clearance problem not only in the United States, but you had that problem abroad. Now up to that point, as I understand it, you concur that was good reasoning and a good recommendation and a proper recommendation that you made to the Bureau of Public Roads. Are we clear? Is that the essence of your testimony?

Mr. CHACEY. That is correct. We considered this, in the Department of Defense, a practical solution to the problem. In other words, we did not consider there was justification to request a higher vertical clearance at that time.

Mr. SCHERER. And that 14-foot up to that time, took care of the military needs both in this country and abroad, because of the policy you had adopted?

Mr. CHACEY. Yes; in large part.

Mr. SCHERER. Then came sputnik and it upset the apple cart; isn't that right?

Mr. CHACEY. Yes, sir.

Mr. SCHERER. Then you began to think immediately, or some people in the Defense Department did, is this 14-foot clearance sufficient? And somebody came to the conclusion it wasn't and then you started to reevaluate the clearance problem in the light of sputnik; and that is where we are now in the testimony and the questions being asked by counsel.

The question is: Was there undue delay in arriving at a conclusion after this change, namely sputnik, took place in October of 1957? Have I stated the case?

Mr. CHACEY. You have stated it very accurately.

Mr. COOK. One more question, if I may. Do I understand, as of sputnik, you and the Defense Department all were satisfied with 14 feet?

Mr. CHACEY. Officially.

Mr. COOK. The day before sputnik went up you were satisfied with 14 feet?

Mr. CHACEY. Before sputnik, the Defense Department officially stated to the Federal Highway Administrator that the 14-foot vertical clearance was adequate.

Mr. COOK. And you did not begin to have any doubts as to the 14 feet until after sputnik?

Mr. CHACEY. We didn't know the seriousness of it until after sputnik.

Mr. COOK. Then you base this primarily——

Mr. BLATNIK. How could sputnik change the clearange requirements for our own defense needs?

Mr. CHACEY. I said after sputnik.

Mr. BLATNIK. What about before, because there are certain types of equipment, with or without sputnik's existence, in reality that had to be be moved. Sputnik didn't inflate them or magnify them nor did it shrink them.

Mr. SCHERER. Mr. Chairman, you were out of the room when Mr. Chacey explained policy prior to sputnik. Up until October, it was the policy of the Defense Department to build military weapons to fit the roads that met civilian needs and that the 14-foot clearance did take care of the type of weapons we had up until sputnik.

Mr. BLATNIK. Up until sputnik we had no military equipment which exceeded 14-foot dimensions; is that correct?

Mr. CHACEY. We had military equipment, some items of military equipment, that would exceed it, but they were items which were determined, operationally, that as an overriding necessity, they would move them by railway transportation or they would sacrifice time by a longer routing to get them to the destination.

Some of the items can be dismantled and moved. Some of the engineer construction items can be dismantled and moved. It isn't probably the best way to move them, the easiest way to move them, but they can be moved in part.

Mr. BLATNIK. We would like you to proceed, just for the record——

Mr. SCHERER. I am sorry.

Mr. BLATNIK. Not at all.

Mr. SCHERER. There was some confusion in my mind as I think there was in other peoples and I wanted to summarize Mr. Chacey's testimony up until this October 1 report to the Bureau of Public Roads.

Mr. BLATNIK. Mr. Clark?

Mr. CLARK. Mr. Chacey, at this very time in October of 1957, which has been going around here, larger missiles, larger equipment at this very time was being designed and also being built. Will you not say that is true for the record?

Mr. CHACEY. I think that is correct and I think that I might say that the initial concept with respect to the Atlas missile was to move it by air.

Mr. CLARK. Now you are bringing in flying missiles by air. Hasn't the decision been reached to continue shipping by highway at this time?

Mr. CHACEY. Sir?

Mr. CLARK. You said you were going to fly the missiles by air.

Mr. CHACEY. The initial concept, the first we heard of it, it was to be moved by air.

Mr. CLARK. The decision at this time is you will move by highways, is that right, or rail?

Mr. CHACEY. The decision that exists today is that a few of them have moved by air, the rest of them have all been moved by railway.

Mr. CLARK. Those that have been moved by air have been experimental?

Mr. CHACEY. I don't know.

Mr. SCHERER. Aren't we going now from liquid propellants to solid propellants?

Mr. CHACEY. That is a question that actually I can't answer but I can give you my understanding——

Mr. SCHERER. That is what I read in the paper.

Mr. CHACEY. And that is that we are going to use both.

Mr. SCHERER. Is the trend for these missiles to become smaller or larger as we progress?

Mr. CHACEY. Well, this is a good question. Things get smaller before they get bigger. I don't know and I am sure nobody else knows.

Mr. CLARK. May I answer the question, Saturn is 22 feet in diameter, is it not?

Mr. CHACEY. I don't believe that is a correct figure.

Mr. CLARK. Approximately or higher?

Mr. CHACEY. Or higher is correct.

Mr. SCHERER. Is that a solid?

Mr. CLARK. That is a solid.

Mr. BLATNIK. We will have missile experts give us more details later on in the course of the hearings. Mr. May, will you continue.

Mr. MAY. Mr. Chacey, I think we should clarify some matters right now.

Mr. CHACEY. One point, may I answer your earlier question. In our letter of March 18, 1958, we stated that although some structures on the National System of Interstate and Defense Highways have already been constructed, it is believed there may be justification for a revision of the vertical clearance standard in order to provide for future military requirements. If an increase in vertical clearance standards would provide a significant contribution to the movement of future defense items it is important this be known at the earliest possible date.

Mr. MAY. Could we clarify this rail transportation. We have here a list of equipment that we will present to you. You have a copy, I believe. Is it the position of the Defense Department that that equipment would be transported by rail?

Mr. CHACEY. It is the position of the Department of Defense that to the extent it is practical and can be accomplished, movement of oversize and overweight items will be by railway transportation.

Now I would like to state that I don't have, I don't seem to have a copy of the regulation here, but there is an official regulation that covers this point.

Mr. MAY. Are you talking about peacetime movement?

Mr. CHACEY. Yes, sir. Well, we are talking about any movement.

Mr. MAY. Let's talk about an emergency. Is it the position of the Defense Department that you would take a tank recovery vehicle and ship it by rail, a 12-foot-wide piece of equipment?

Mr. CHACEY. To the extent that it could be handled and meet the military requirements, yes.

Mr. MAY. Now when the time comes and railroads could not handle it, then what do you do with the equipment?

Mr. CHACEY. Only one of two answers, it moves by highway or it moves by air or it doesn't move.

Mr. MAY. A lot of this equipment, in order to move by highway, needs structures higher than 14 feet?

Mr. CHACEY. Some of those items do exceed 14 feet vertical clearance.

Mr. MAY. That was true in October of 1957?

Mr. CHACEY. That is correct.

Mr. MAY. We also mentioned a short time ago that the military designed this equipment for less than 14 feet. Actually the military tried to design the equipment for less than 14 feet. These are examples, these pieces are examples, where they were unable to do so?

Mr. CHACEY. That is correct.

Mr. MAY. Mr. Chacey, is it possible to move the Atlas missile on the railroad?

Mr. CHACEY. No, sir.

Mr. MAY. Are you aware of the situation during the Korean conflict when 50 tanks were shipped to Korea?

Mr. CHACEY. I don't recall.

Mr. MAY. Do you recall that the tanks had to be dismantled and tracks had to be taken off the tanks before they were shipped to the west coast and then on to Korea?

Mr. CHACEY. I know that there was some of that done. Now, just whether it is this shipment you are speaking of or whether it had to do with these 50 tanks or not—I know it has been done.

Mr. MAY. Is it not a fact the tracks were removed from the tanks in order that they could be shipped on railroads. The tanks arrived in Korea and after the Korean conflict they were still sitting there without the tracks?

Mr. CHACEY. I am not aware of that.

Mr. MUMMA. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Mumma?

Mr. MUMMA. Now we have a military installation near me, I might say hundreds and thousands of tanks are stored there and they pass through Harrisburg and I have seen many a train full go over the bridge of the Susquehanna, many tanks. There may be certain models that are larger than that, but they never took the tread off of those.

Mr. MAY. The tanks do vary in size.

Mr. MUMMA. They used a lot of all of these that were pretty standard.

Mr. MAY. Tank recovery vehicle for example——

Mr. MUMMA. That is a low-bed trailer. Now it is a good bit higher with the tank off.

Mr. MAY. These tanks to be transported must be put in a transport to move along the highway.

Mr. MUMMA. I don't know. I see them running over the highways in these war pictures. They don't have a tank remover or whatever it is, retriever. That is a low-bed trailer that you run them up on when they are disabled.

Mr. MAY. In a tactical movement, the tank might move by itself, when they are being shipped they move on transporters.

Mr. MUMMA. When they are in service, active service they move by themselves until they are disabled and then they go around with these retrievers and get them off the battlefield.

Mr. MAY. When they are disabled they then need a tank recovery vehicle.

Mr. MUMMA. They do not ship both at once one on top?

Mr. MAY. The tank recovery vehicle runs 14 feet 6 inches.

Mr. MUMMA. Different ones than I have seen.

Mr. MAY. They are 12 feet wide and cause a great difficulty to the railroad. And some railroads could not handle these vehicles, could not transport them.

Mr. MUMMA. I don't doubt that is true, but standard railroads of America can handle them.

Mr. MAY. Pennsylvania Railroad could not bring a tank into New York.

Mr. MUMMA. Now come on. They can't go through those tunnels or anything else. That is a very unfair question.

Mr. BLATNIK. Mr. Johnson?

Mr. JOHNSON. Mr. Chairman, might I ask Mr. Chacey a question or two. Mr. Chacey, I would like to have you tell me what a national defense highway is. What is it to be used for in time of an emergency?

Maybe I don't understand but I think a national defense highway meant more in 1956 when it was included in the Interstate System than has been told here today. I think it has a very definite purpose in the defense of this country in time of war.

Now, with your experience, I would like to hear what the national defense highway is supposed to be and what it is supposed to be used for?

Mr. CHACEY. Well, the Department of Defense, for a period of a good many years now, has officially designated the National System of Interstate Highways as the principal system of highways to serve the needs of national defense.

In doing this, they had in mind several things: One, was that economically we can't build all highways to the highest modern standards; two, there is need for flexibility and control over the movement of the large volumes that were coming on to our highway systems, not from the standpoint of peacetime industry needs, but from the standpoint of our potential needs under national emergency conditions.

Back of this thinking was the effect of dispersal of our industries and the fact that many of our weapons are becoming much more complicated. One system that we reviewed—I saw a review the other day, for example—I believe this is a correct figure, 140-some different industries strung all over the United States contributed to this one end item.

Therefore, it becomes more important that we have an efficient system of highways to service this industry. Then from the standpoint of movement of troops and such as that, under potential conditions of national emergency, we felt that our street system was inadequate. That is the reason the Department of Defense has emphasized so greatly control of access. It would be virtually impossible to control traffic in our old street system with an intersection every block or so and direct access all along it, so that the highest priority needs of the national defense could be moved on our public highway system.

Recognizing full well that these needs were not entirely military and may be civilian in character, we believe that it was a desirable relationship to build a system of highways that would serve the na-

tional defense and support an expanding and prosperous civilian economy.

Now, I don't know, I have rambled a little bit. I don't know if I have covered the point you had in mind.

Mr. JOHNSON. Now, shouldn't there have been a true standard developed for the width and vertical clearance on these overpasses we are talking about here now? I know that in our State—and we are building probably as much national defense highway as any other State—California has approved a freeway system that amounts to a good many hundred miles and the height of these structures is very important.

I thought that in 1956, when the Highway Act was passed, and structures got underway in 1957, there was an awful long time taken between the various agencies who had this responsibility at the Federal level and State people who were in this picture.

And it is my understanding from this investigation, and the information that we hope to receive from you people that we must arrive at a proper vertical height for these structures.

Now, seemingly some people in the Army and some people in the Navy and Air Force didn't know all of the problems. And, as these gentlemen gave us their knowledge of their operations here this afternoon, they were given the job to move this, but there were certain obstacles that were in their way and took a certain amount of additional time and effort.

Now, I think that all of our Federal agencies here certainly have a responsibility in agreeing on the standard and height of these structures because of the millions and millions of dollars being spent. If we knew how high to build them to start with, we could have saved a lot of money, and, at the same time, provided a real highway system for the national defense.

Mr. SCHERER. Will the gentleman yield for just one observation?

Mr. JOHNSON. Yes.

Mr. SCHERER. We must remember that all of the slides that we saw and all of the problems that the witness Leonard talked about arose on highways that were built prior to the 1956 act.

Mr. JOHNSON. I fully realize that, Mr. Scherer. There are highways that have been built since your Interstate System went into effect that wouldn't take them any better than the ones you looked at.

Mr. BLATNIK. What we saw were 14-foot clearances. By and large there might have been an exception or two but our point was that in these pictures, I think all of them or certainly most of them had a 14-foot clearance. That was the clearance determined upon for the Interstate System for overpasses that supposedly would be adequate.

Mr. SCHERER. I certainly agree with you. I wish to point out that the pictures of these missiles being transported over these highways, however, were taken subsequent to the effective date of the 1956 Act of highways and structures built prior to 1956; I wish to further point out that our area of investigation starts as of October 7, to see whether or not after Sputnik, there was negligence or carelessness on the part of the Bureau of Public Roads, the Defense Department, Congress or the trucking industry, in deciding whether or not we should have had a higher clearance at an earlier date than they did so decide. I think that is the point of our investigation.

Mr. BLATNIK. I would like to proceed. The time is getting late.

Mr. JONES. I would like to make one response to Mr. Scherer's observation. I hate to give sputnik credit for all of this thinking. I think that there were plenty of vehicles that we had to move over our highways prior to sputnik that needed attention as it relates to national defense highways.

I certainly think, from the standard we looked at today, we have many other types of equipment that we have to move in time of emergency other than the missiles. That is my point.

I think, when you people passed this act in 1956, you were going to build a national defense highway and certainly there should have been agreement on the vertical clearance for those structures. I don't think the proper thinking went into it.

Mr. BLATNIK. Mr. Clark?

Mr. CLARK. Mr. Chairman, I won't belabor this point. I think that all of us all over the United States are very much concerned about the mobility aspect of our defense system and whether or not we are going to be able to move these big items in the future.

Now, since 1956, there have been 8,700 underpasses or overpasses that have been built, not to the new specifications under the new ruling that you have now come out with just 2 weeks ago—16 feet. But in 1959 alone, while all these letters were supposed to be going around just in Washington, D.C., 10 months it took the Defense Department to make up its mind what it was going to do and there have been 2,300 underpasses or overpasses built since that time.

To me the indecision is really bad as far as our national defense system is concerned. And I think that we should all be more than concerned to see that something like this does not happen in the future.

Mr. MAY. Mr. Chairman, I would like to present this to Mr. Chacey and have him identify it and make it an exhibit.

Mr. Chacey, would you hold that? We have been talking about delays. This memorandum might be indicative of some of the problems that you ran into. Would you read it, please?

Mr. CHACEY. This is a memorandum for record dated June 5, 1958, by Mr. Frerich in my office. Subject: Highway clearance standards.

Our DF of March 13, 1958 through DCSLOG and Chief, Research and Development, to DCSOPS on the above subject has not been replied to as yet. We had asked for a reply by April 30, 1958.

Mr. MAY. What were those dates?

Mr. CHACEY (reading):

We asked for a reply by April 30, 1958.

Mr. MAY. On what date?

Mr. CHACEY. On March 13, 1958.

Mr. MAY. All right.

Mr. CHACEY (reading):

On April 28, Colonel Howell, Office of the Chief, Research and Development, called and said that the DF had not been to DCSOPS yet and that more time would be needed.

Mr. MAY. DCSOPS would be whom?

Mr. CHACEY. Deputy Chief of Staff for Operations. [Reading:]

Today Maj. W. M. Wilson, Doctrines and Combat Development Division, was called and he advised that the DF had been forwarded to Major McDonald, who was the action addressee.

Major McDonald advised it was being coordinated with Vehicle Development and he would follow up on it.

Mr. MAY. What is the date of the memo?

Mr. CHACEY. June 5, 1958.

Mr. MAY. March to June and still it had not been handled. What is a DF, Mr. Chacey?

Mr. CHACEY. Sir?

Mr. MAY. What is a DF?

Mr. CHACEY. Disposition form. It is a communication form used in the Department of Defense.

Mr. MAY. And what was that disposition form asking him to do? Wasn't that March 13 letter asking for reevaluation?

Mr. CHACEY. Yes, sir; that was a letter that requested reevaluation of the vertical clearance standard.

Mr. MAY. Three months later and they had not even gotten it?

Mr. CHACEY. It had gone to two other staff divisions and had not as yet arrived at the Deputy Chief of Staff for Operations.

Mr. MAY. Thank you. Mr. Chacey, in October of 1957, the military had available a trailer transport, M–15A2 to handle certain heavy equipment. Now was there any other piece of equipment able to haul these large and heavy items?

Mr. CHACEY. This was the principal item of the Chief of Ordnance to haul heavy equipment, heavy loads. The Chief of Engineers had a heavy equipment trailer. I am not certain of the designations.

Mr. MAY. What is the floor bed height of that M–15A2?

Mr. CHACEY. The information I have here is 42½ inches.

Mr. MAY. We made an exhibit out of this list of pieces of equipment which you drew up. Did you have knowledge that this equipment existed back in October of 1957?

Mr. CHACEY. I knew there were some oversize items. I did not have knowledge of each of these detailed items.

Mr. MAY. Why was this list drawn up?

Mr. CHACEY. Sir?

Mr. MAY. Why was this list drawn up?

Mr. CHACEY. This list was drawn up by our transportability people because of the feeling that we were getting a large number of oversize items in the supply line and that it should be brought to somebody's attention.

Mr. MAY. Who asked that this be drawn up?

Mr. CHACEY. This particular list?

Mr. MAY. Yes, sir.

Mr. CHACEY. I am not sure whether anybody else did; I know I did.

Mr. MAY. Did I?

Mr. CHACEY. I think it was requested when you were over there.

(Exhibit 11 follows:)

EXHIBIT 11

Partial list of military equipment that requires an excess of 13 feet, 6 inches, vertical clearance for highway transportation

Army Ordnance type of equipment	Weight	Height	Loaded heights—Type of transporter [1]		
			M-15A2, floor bed height, 40½ inches	M-172, floor bed height, 35 inches	M-162 and Martin, floor bed height, 38 inches
Carriage, motor, 90 mm. gun, M-36	61,000	10 feet, 5 inches	13 feet, 9½ inches	Too heavy	13 feet, 7 inches.
Carriage, motor, 155 mm. gun, M-40	81,000	10 feet, 9 inches	14 feet, 1½ inches	do	13 feet, 11 inches.
Carriage, motor, 8-inch howitzer, M-43.	80,000	do	do	do	Do.
Gun, SP, 155 mm., M-40	81,000	10 feet, 10 inches	14 feet, 2½ inches	do	14 feet.
Gun, SP, 155 mm., M-53	89,700	11 feet, 2 inches	14 feet, 6½ inches	do	14 feet, 4 inches.
Howitzer, 155 mm., SP, M-44	58,000	10 feet, 2½ inches	13 feet, 7 inches	do	13 feet, 4½ inches.
Howitzer, 105 mm., SP, M-52	54,100	11 feet, 1 inch	14 feet, 5½ inches	do	14 feet, 3 inches.
Howitzer, 8 inch, SP, M-55	86,200	11 feet, 2 inches	14 feet, 6½ inches	do	14 feet, 4 inches.
Landing vehicle, trkd LVT (4) and (5).	40,000	10 feet, 2½ inches	13 feet, 7 inches	13 feet, 1½ inches	13 feet, 4½ inches.
Tank, combat, 90 mm. gun, M-48A2	98,000	10 feet, 1½ inches	13 feet, 6 inches	Too heavy	13 feet, 3½ inches.
Tank, combat, 120 mm. gun, M-103A1.	117,000	10 feet, 7 inches	Too heavy	do	13 feet, 9 inches.
Tank, main battle, 105 mm. gun, M-60.	93,500	10 feet, 6 inches	13 feet, 10½ inches	do	13 feet, 8 inches.
Tank recovery vehicle, M-51	116,000	10 feet, 9 inches	Too heavy	do	13 feet, 11 inches.
Tank recovery vehicle, M-74	88,600	11 feet, 1½ inches	14 feet, 6 inches	do	14 feet, 3½ inches.

Army Engineer type of equipment	Weight	Height	Loaded heights—Type of transporter [1]		
			M-15A2, floor bed height, 40½ inches	M-172, floor bed height, 35 inches	M-162 and Martin, floor bed height, 38 inches
Crane, shovels, crawler mounted	From 37,410 to 101,000	From 10 feet, 3 inches, to 13 feet, 7 inches.	From 13 feet, 7½ inches, to too heavy.	From 13 feet, 2 inches, to too heavy.	From 13 feet, 5 inches, to 16 feet, 9 inches.
Crushing, screening, and washing units, crawler mounted.	From 64,880 to 77,090	From 13 feet, 7 inches, to 14 feet, 9 inches.	From 16 feet, 11½ inches, to 18 feet, 1½ inches.	Too heavy	From 16 feet, 9 inches, to 17 feet, 11 inches.
Scrapers, ditching machines, tractors, crawler mounted.	From 32,700 to 41,630	From 10 feet, 1 inch, to 12 feet, 3 inches.	From 13 feet, 5½ inches, to 15 feet, 7½ inches.	From 13 feet to 15 feet, 2 inches.	From 13 feet, 3 inches, to 15 feet, 5 inches.
Concrete mixers and loaders, crawler mounted.	From 20,300 to 23,000	From 11 feet to 13 feet	From 14 feet, 4½ inches, to 16 feet, 4½ inches.	From 13 feet, 11 inches, to 15 feet, 11 inches.	From 14 feet, 2 inches, to 16 feet, 2 inches.

[1] Commercial transporter is approximately the same as M-162 and Martin with floor bed height of 38 inches.

	Weight	Basic height	Loaded height on special transporters
Miscellaneous:			
Aircraft fuselage F-102	Not available	Not available	13 feet 9 inches.
Aircraft control tower loaded on 25T semitrailer	do	do	16 feet.
Boat, picket, diesel, steel	20,000	13 feet, plus 6-inch cradle	Unknown but will be greater than 13 feet, 6 inches.
Helicopter, utility, H-19D	4,296	13 feet, 4 inches	Unknown but will be greater than 13 feet, 4 inches.
LARC-15	38,000	13 feet, 8 inches	Unknown but will be greater than 13 feet, 8 inches.
Transformer (GE or Westinghouse) (Engineer)	220,000	16 feet, 5 inches (KD)	Unknown but will be greater than 16 feet, 5 inches.
Missiles:			
Atlas missile on transporter	40,000	Not available	15 feet, 3 inches.
Atlas radar: 6 truckloads, largest piece	Not available	do	16 feet, 6 inches.
Atlas launcher on semitrailer	97,380	do	15 feet, 4 inches.
Redstone missile on trailer	26,640	do	10 feet, 5 inches.
Redstone booster container on semitrailer	20,600	do	11 feet.
Jupiter on semitrailer	17,100	do	11 feet.
Nike-Zeus TTR pedestal on special trailer	Not available	do	14 feet, 8 inches.
Corporal erector	59,000	14 feet, 4 inches	To be determined (cannot move any great distance under own power).
Space vehicle:			
Conceptual item: Dynasoar (Martin Co. concept):			
Full trailer	Not available	Not available	15 feet, 2 inches.
Semitrailer	do	do	14 feet, 6 inches.

Mr. MAY. I think it is significant now and we should read the items here. These do not relate to the missile program. And these existed in 1957. These are the items which will cause some difficulty in attempting to transport them under a 14-foot vertical clearance. You have cranes, shovels, crawler mounted, and using that particular trailer we mentioned the height would go from 15 feet, 9 inches, to 16 feet, 9 inches; 15 feet, 5 inches to 15 feet, 9. That would be using the engineers' trailer, the M–162. You had crushing, screening and washing units, crawler mounted, running from 16 feet, 9 inches, to 17 feet, 11 inches. Ditching machines, tractors, crawler mounted, from 13 feet, 3 inches, to 15 feet 5 inches. Concrete mixers and loaders, crawler mounted, from 14 feet, 2 inches, to 16 feet, 2 inches.

Now that equipment would be used by the Corps of Engineers, is that true?

Mr. CHACEY. That is correct.

Mr. MAY. Would it be necessary for the accomplishment of their mission?

Mr. CHACEY. Yes, sir. This is, however, standard civilian type construction equipment. It is not a special military item.

Mr. MAY. It is not, but it would be very essential to the Corps of Engineers, especially in an emergency.

Mr. SCHERER. I think the witness has already explained that these were pieces of equipment that they decided they could handle by moving around clearances that were 14 feet or under?

Mr. MAY. Is that true, Mr. Chacey, that you could move around?

Mr. CHACEY. These items can be dismantled or under the present system of loads——

Mr. MAY. Can they be dismantled, Mr. Chacey?

Mr. CHACEY. Yes, sir.

Mr. MAY. We saw items of equipment, a dragline today, for example, that could not be dismantled any more than it had been and it ran 15 feet.

Mr. CHACEY. Well, I do not want to labor the problem, but most of these items are items which, except for time requirements, can be dismantled to some extent. Now, it is not probably the best way to move them and it is not something that you like to do, but nevertheless, it is something that they felt that for the few movements that this type of equipment—and this is not a type of equipment that moves back and forth continuously over the highway—it is a one-time move into a construction——

Mr. MAY. Peacetime or wartime, it does not move over the highway normally in peacetime or wartime?

Mr. CHACEY. It does not move back and forth over the highway in commerce. It is not a part of mobile defense materiel. It is something that you move into a site and build an airfield and make work there for 30 days. It may work there for 2 days.

Mr. MAY. Would the Corps of Engineers like to be able to move this equipment over the highways, Mr. Chacey?

Mr. CHACEY. Definitely.

Mr. MAY. You might check. Well, you will be back tomorrow, you might check and see how these things can be broken down.

Mr. CHACEY. It is not easy, all of them; some of them are.

Mr. MAY. I think it is worthwhile mentioning some of the other equipment; 155-millimeter gun. First we have a 90-millimeter gun running 13 feet, 9½ inches on its transport; 155-millimeter gun, 14 feet ½ inch; 8-inch howitzer, 14 feet 1½ inches; 155-millimeter gun, M–40, 14 feet 2½ inches; 155-millimeter gun, M–53, 14 feet 6½ inches; 155-millimeter howitzer, M–44, 13 feet 7 inches; 155-millimeter howitzer, M–52, 14 feet 5½ inches; 8-inch howitzer, M–55, 14 feet 6½ inches.

Landing vehicle, track, 13 feet 7 inches; 90-millimeter gun, combating, 13 feet 6 inches; main battle tank, 105-millimeter gun, M–60, 13 feet 10½ inches; tank recovery vehicle, M–74, 14 feet 6 inches.

M–103 tank, which you had in October 1957, 14 feet 1 inch. Aircraft control tower loaded on a 25-ton semitrailer, 16 feet.

Atlas missile on its transporter, it says here, 15 feet 3 inches. That is the Atlas, including the vernier, Mr. Chacey?

Mr. CHACEY. That is correct.

Mr. MAY. Atlas radar, 16 feet 6 inches. Atlas launcher on semitrailer, 15 feet 4 inches.

Nike-Zeus missile, 14 feet, 8 inches. New space vehicle Dynasoar, which you did not have in 1957, you do have now, 15 feet 2 inches?

Mr. CHACEY. I would like to correct that one statement, Mr. May.

Mr. MAY. Yes, sir.

Mr. CHACEY. The reference to Nike-Zeus had to do with one item, a radar item we have; it is not the missile. We refer to it as Nike-Zeus missile and it is actually an item associated with the radar equipment.

Mr. MAY. We understand you have a gun in development now, 175-millimeter gun, using any of the vehicles to transport this gun, that will run over 14 feet.

Mr. SCHERER. That is right. That is the reason they asked for 16 feet.

Mr. CHASEY. The last item you read, I don't have here.

Mr. MAY. No; I obtained that from Ordnance people. But the point is, Mr. Chacey, that this equipment existed in October 1957, even before.

Mr. CHACEY. I am not certain all of these existed in October of 1957.

Mr. MAY. Will you agree that in large part these items existed in 1957?

Mr. CHACEY. These are comparable items of equipment. These are replacements. Many of them may have been replaced.

Mr. MAY. So there did exist at that time a problem in transporting these pieces of equipment?

Mr. CHACEY. There is no question about it.

Mr. SCHWENGEL. I had one question. In modern warfare, how important are these now with what we know about the modern missiles? Will they be more important as time goes on or less important?

Mr. BLATNIK. Could the chairman defer that question because we will have the Defense people who will be in a better position and with more authority to give us the answer.

Mr. SCHWENGEL. I will withdraw the question.

Mr. CHACEY. Thank you. I am not qualified to answer that question.

Mr. BLATNIK. If there are no further questions, with agreement of the members of the subcommittee, we would like to adjourn today's hearing and agree to meet tomorrow at 9:30, hoping to conclude around 1, or shortly thereafter.

Thank you, Mr. Chacey, and your associates.

The first day's hearing is concluded.

(Thereupon, at 4:50 p.m. the subcommittee was adjourned, to reconvene at 9:30 a.m., Wednesday, February 10, 1960.)

DEFENSE HIGHWAY NEEDS

WEDNESDAY, FEBRUARY 10, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to adjournment, at 9:45 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommittee) presiding.

Present: Representatives Blatnik, Fallon, Smith, Wright, Edmondson, Johnson, Cook, Scherer, Baldwin, Schwengel, Robison, and Mumma.

Also present: Walter R. May, chief counsel; John P. Constandy, associate counsel; George H. Martin, administrative assistant; Sherman S. Willse, investigator, and Kathryn M. Keeney, clerk of subcommittee.

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program will please come to order.

We convene this morning in the second day of public hearings on matters relating to the determination of certain design requirements by the Department of Defense on the Interstate Highway Defense System. We will continue this morning with our witness of yesterday, Mr. D. K. Chacey, Assistant Chief of Transportation for the Department of the Army.

Mr. Counsel, you were in the process of interrogation. Will you resume where you left off as of yesterday afternoon?

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY—Resumed

Mr. MAY. Mr. Chacey, we covered the situation wherein on March 18, 1958, the Chief of Transportation's Office submitted another letter to the various branches of the military asking for a reevaluation of their attitude toward the 14-foot vertical clearance. In April you heard from the Air Force and the Air Force said that they would like 16 feet to be considered. April 24, 1958, you heard from the Navy. They said 14 feet would be acceptable.

May 1, the Chief of Ordnance replied that 14 feet would be adequate for all commands except the Ordnance Missile Command, and that command suggested that 17 feet be considered.

On July 24, 1958, the Deputy Chief of Staff for Military Operations of the Army wrote a lengthy letter stating that the 14-foot vertical

clearance standard would be inadequate and suggested that as the point of departure at least a 20-foot vertical clearance be considered.

Mr. SCHERER. What was the date of this letter? I'm sorry I missed it.

Mr. MAY. July 24, 1958. We took note of the fact that the inquiry began on March 18, and on July 24 you finally heard from the Deputy Chief of Staff for Military Operations. Therefore, a 4-month period had elapsed.

In that July 24 letter, Mr. Chacey, the Deputy Chief of Staff for Military Operations called your attention to the fact that the Chief of Research and Development was willing to participate in a detailed study of the matter. Was such a study ever conducted?

Mr. CHACEY. Such a study was not undertaken. It was felt that it would be time consuming to establish an ad hoc committee to do this, No. 1; and, No. 2, we felt that we had the people who would be participating in such a group already studying this problem in the various staff and department agencies.

Mr. MAY. It was considered at that time there was no need for such a study?

Mr. CHACEY. Well, I don't mean to imply that there was no need to study this. We continued to study it through the designated representatives of the various agencies and military departments. The fact that we didn't take the time to have them designated as a nofficial committee as was suggested, is correct.

Mr. MAY. How would an ad hoc committee study differ from what you could do?

Mr. CHACEY. Well, I think there would probably have been a little more formality to it, and I think frankly a little more time-consuming, but frankly, the same people who were handling the problem and studying it would have been on the committee, and there would have been little or no difference.

Mr. MAY. Mr. Chacey, in August you received estimates from the Bureau of Public Roads relating to this problem. What did you learn at this time?

Mr. CHACEY. I think what happened here was that we became—in view of the variation of expressions we received from the various military departments, we felt that it was desirable to furnish the people studying this problem more information on the implications with respect to cost. Therefore we felt that it would be desirable to get a little more detail than we had for these people, and we requested this from the Bureau of Public Roads.

Mr. SCHERER. On what date did you make this request?

Mr. CHACEY. I am not certain of the date of the request. Some information was made available to us in the latter part of August. I see here an interoffice communication under the date of August 27, so it was sometime in that area that we received the information.

Mr. SCHERER. Mr. Chacey, can you tell us when you first called it to the attention of the Bureau of Public Roads, or discussed with them the possibility that the Defense Department might want to ask for an increase of vertical clearance over and above the 14-foot limitation? When were they first made aware of it? The only thing I remember from your testimony is the fact that on October 1, 1957, you had advised the Bureau, after a complete study had been made by

the various agencies, that 14 feet was satisfactory. When after that was the first time that the Bureau of Public Roads was asked for any information about increasing this vertical clearance? When were they alerted?

Mr. CHACEY. In accordance with our normal procedures, I can't identify the date, but as we received this information from the various agencies of the Department of Defense, and particularly I am certain when we received the reply from the Deputy Chief of Staff for Logistics, or for Operations, I did discuss this with the Bureau of Public Roads representatives, and this date was July 1958.

Mr. SCHERER. July 1958?

Mr. CHACEY. Yes.

Mr. SCHERER. At that time did you indicate to them that any decision had been made with reference to the opinion of the Department of Defense that an increase was demanded or wanted?

Mr. CHACEY. No, sir. No decision had been made as of that date.

Mr. SCHERER. That is what I meant.

Mr. CHACEY. I see here in another memorandum dated March 1958 that we had discussed the cost problem with the Bureau of Public Roads, and the possibility of some increase being required.

Mr. SCHERER. When was the first request made of the Bureau of Public Roads to give you estimates of cost for increasing the vertical clearance on the Interstate System?

Mr. CHACEY. I think this was the March 1958 period in which we, as I recall it—I think I mentioned this yesterday, that this was the time that we felt we should have some guidance as to about what this was going to be, but did not ask for specific engineering estimates.

Mr. SCHERER. What did you ask for in March 1958?

Mr. CHACEY. We asked for some indication of the approximate cost of increasing the vertical clearance on the structures yet to be built on the Interstate System.

Mr. SCHERER. Did you ask for the cost of different heights at that time, or did that come later?

Mr. CHACEY. I believe we asked for two heights at that time—16 and 18 feet.

Mr. SCHERER. That was for 16 and 18 feet? Then when was it you asked them for detailed engineering costs on 16, 18, 20, and 24 feet?

Mr. CHACEY. To be real honest about it, and in all fairness, we never asked for and never assumed it was possible to give specific and detailed estimates as to the exact figures of cost, but we did ask them for more specific information upon receipt of the communication from the Deputy Chief of Staff for Military Operations, which was dated July 24. The exact time which——

Mr. SCHERER. July 24, 1958?

Mr. CHACEY. The exact date on which we went to them I don't know, but their reply came to us in the latter part of August.

Mr. SCHERER. August 1958?

Mr. CHACEY. Yes, sir.

Mr. SCHERER. And that was a reply with reference to what? What figures?

Mr. CHACEY. From that exchange, and this was principally informally, we learned the underclearance—the additional cost for underclearances of 16, 18, 20, 22, and 24 feet.

Mr. SCHERER. You have no idea, of course, how long it took them to make those studies or evaluations?

Mr. CHACEY. No, sir; I do not. I know that they have always given us some priority in helping to work out this kind of problem. They did in these instances.

Mr. SCHERER. That is, the Bureau gave you priority whenever you asked them for information?

Mr. CHACEY. Yes, sir.

Mr. BLATNIK. Mr. May.

Mr. SCHERER. I am sorry. I wanted to keep these things straight.

Mr. MAY. Let us review just a moment, Mr. Chacey.

In December 1957, at the American Association of State Highway Officials' convention, you mentioned the problem to Mr. Siegle, a representative of the Bureau of Public Roads. Is that true?

Mr. CHACEY. That is correct.

Mr. MAY. Then you got the estimate in March and got another estimate in August?

Mr. CHACEY. That is correct.

Mr. MAY. That August estimate——

Mr. SCHERER. Pardon me, Counsel. When you discussed it with Mr. Siegel at this American Association of State Highway Officials' convention, was that just kind of a discussion about a problem that was arising, or at that time was any request made that the Bureau do anything about it?

Mr. CHACEY. No, sir. There was no basis for an official request to the Bureau at that time. These were the people—Mr. Siegle and Chacey—Mr. Siegle in the Bureau and Chacey in Defense and Erickson in the Bureau are the working level people who are supposed to be worrying about these things.

Mr. SCHERER. And you were worrying about them at that time?

Mr. CHACEY. We were. That is right.

Mr. SCHERER. And you realized something might have to be done about this in view of developments?

Mr. CHACEY. That is correct.

Mr. MAY. In December of 1957, Mr. Chacey, you were concerned about the 14-foot vertical clearance?

Mr. CHACEY. I didn't get the first part of that question.

Mr. MAY. In December 1957 you were concerned about the 14-foot vertical clearance standard?

Mr. CHACEY. Yes, sir.

Mr. MAY. And you expressed your concern to Mr. Siegle?

Mr. CHACEY. Yes, sir.

Mr. MAY. Mr. Siegle is your counterpart in the Bureau of Public Roads?

Mr. CHACEY. That is correct.

Mr. MAY. You maintain a liaison with the Bureau of Public Roads through Mr. Siegle?

Mr. CHACEY. That is correct.

Mr. MAY. On your estimate that you received in August, do you have a copy available there, Mr. Chacey?

Mr. CHACEY. The copy that I have here dated August 1 identifies percentages. The information that we gave you——

Mr. SCHERER. Percentages of what? Of cost?

Mr. CHACEY. Percentages of increased cost.

Mr. SCHERER. Cost?

Mr. CHACEY. Which itself is not too indicative. I don't have here a communication on specifically how we obtained it. It was informally, I am sure. By the time we furnished—when we furnished this information to the Deputy Chief of Staff for Operations we identified the underclearance, the percent and the additional cost in millions of dollars.

Mr. SCHERER. Counsel, is it in the record now when the first request was made of the Bureau of Public Roads for some definite cost estimates? Is that in the record?

Mr. MAY. Mr. Chacey just testified——

Mr. SCHERER. I just did not recall.

Mr. MAY. That he asked the Bureau of Public Roads for an estimate in March and he received it on March 13. Mr. Chacey, is that right? We will have additional testimony on that.

Mr. SCHERER. Yes. We have been working on it.

Mr. CHACEY. I do not have it as to whether it is March 13 or 18. We put the memorandum in the record.

Mr. MAY. The record is clear in March 1958 you did receive an estimate from the Bureau of Public Roads relating to this problem.

Mr. SCHERER. I thought he said August.

Mr. MAY. March, Congressman, he received the first estimate.

Mr. CHACEY. The first estimate was furnished in March 1958.

Mr. SCHERER. What was it you received in August then?

Mr. MAY. Second estimates.

Mr. CHACEY. The more detailed estimates of different, other clearances—additional clearances.

Mr. SCHERER. The one you asked for in March was just a rough estimate on 16 and 18 feet?

Mr. CHACEY. That is correct.

Mr. SCHERER. Then you asked for some more detailed information with reference to various heights, and you got that in August?

Mr. CHACEY. That is correct.

Mr. SCHERER. Fine. It takes a little while to sink through.

Mr. MAY. Mr. Chairman, can we present this to Mr. Chacey?

(Document handed to witness.)

Mr. MAY. What is that document, Mr. Chacey?

Mr. CHACEY. This is a copy of an interoffice memorandum of the Bureau of Public Roads, a copy of which—dated August 27, 1958, a copy of which was furnished to our office. However, the copy I have here does not have the pencil marks on it that the copy that you presented to me has.

Mr. MAY. Did you ever receive a dollar value at that time from the Bureau of Public Roads?

Mr. CHACEY. Well, I am sure we did. I cannot identify the document but we included in our October letter the dollar values.

Mr. MAY. What would the dollar value be of the estimated cost of raising the structures to 16 feet?

Mr. CHACEY. Let me clarify one point. On September 17, 1958, we have a memorandum here which includes the dollar value.

Mr. MAY. What would the dollar value be for raising the structure to 16 feet?

Mr. CHACEY. $159 million.

Mr. MAY. To 16 feet?

Mr. CHACEY. Yes, sir. On this document. The one you have—the document you furnished me, has 94.

Mr. MAY. What is your dollar value for raising the structures to 18 feet?

Mr. CHACEY. $348 million, and on this paper it is $214 million.

Mr. MAY. We are talking now about building future structures at 16 and 18 feet.

Mr. CHACEY. That is my understanding. That is my understanding. That is what we have talked about consistently, the problem being, first of all, to determine what we are going to do from here out.

Mr. MAY. Fine.

Mr. SMITH. That would be the cost of all these increases for all of these structures? Is that estimated?

Mr. MAY. For future structures.

Mr. SMITH. On all of the future structures.

Mr. MAY. We will later have testimony on this. On September 29, 1958, did you receive another estimate of cost from the Bureau of Public Roads?

Mr. SCHERER. Mr. Counsel, before we get to another estimate, should we not complete the estimate he received?

Mr. MAY. No, Congressman. We are going to have later testimony on these estimates in more detail from the people who made them.

Mr. CHACEY. Yes. We have a memorandum here dated September 29, 1958. I don't see a reference to a specific cost. However, it does refer to the fact that the 1.57 percent does not include approximately 7,000 bridges, of which 476——

Mr. MAY. Do you have there a total of $591 million estimated for building the structures at 20 feet?

Mr. CHACEY. For 20 feet?

Mr. MAY. Yes. The additional cost for building the structures in the future at 20 feet instead of 14 feet.

Mr. CHACEY. $591 million is the figure we have on both of these papers.

Mr. MAY. Thank you. We will withhold further testimony on these estimates until a little later, Mr. Chacey.

Mr. SCHERER. Again shouldn't we, while we are talking about the estimate received in August of 1958, shouldn't we have in the record what the Bureau of Public Roads gave them at that time with reference to all of the different height clearances requested?

Mr. MAY. Congressman, in just a few moments we are going to hear from a representative of the Bureau of Public Roads.

Mr. SCHERER. I understand that. I understand that. The reason why I am asking the question is that to my mind this would constitute a tremendous amount of work on the part of the Bureau of Public Roads to make these computations of increased cost on all of these bridges. To do it on an increase from 16 feet to 18 feet, of course, takes time, but when you asked for the cost of 20 feet and 22 feet and 24 feet, that takes additional time. That is the only reason why I asked the question. I just wanted to point that out.

Mr. MUMMA. May I interrupt you for a minute? It would take a lot of time because when you go up in the air a couple of feet higher,

it is not only the foundations and the steel that has to be redesigned, but the bracing of those columns 4 or 5 feet would have to be gone over.

Mr. MAY. Mr. Chairman, could we call Mr. Erickson for just a moment?

Mr. BLATNIK. Mr. Erickson of the Bureau of Public Roads.

Mr. MAY. Mr. Chacey, would you remain there, please, and maybe Mr. Erickson could sit at the end of the table.

Mr. BLATNIK. Mr. Eric L. Erickson, Chief of the Bridge Division, Office of Engineering, Bureau of Public Roads. Mr. Erickson, will you please take a seat?

STATEMENT OF ERIC L. ERICKSON, CHIEF, BRIDGE DIVISION, OFFICE OF ENGINEERING, BUREAU OF PUBLIC ROADS

Mr. MAY. Mr. Erickson, these estimates that we have been discussing, you have heard the testimony relating to them?

Mr. ERICKSON. That is correct.

Mr. MAY. Were these estimates drawn up under your supervision?

Mr. ERICKSON. Yes. They were drawn up under my supervision and partially by myself.

Mr. SCHERER. Could you talk a little louder? You are not on the microphone hookup, Mr. Erickson.

Mr. ERICKSON. All right. They were drawn up under my supervision and partly by myself.

Mr. MAY. We discussed originally an estimate made or submitted on March 13, 1958. Could you tell the subcommittee how long it took you to draw up that estimate?

Mr. ERICKSON. This first estimate that you mentioned was very preliminary in character. All that Mr. Chacey had requested at that time was some indication as to what might be involved should clearances be raised. This estimate pertained only to new construction. No consideration was given at that time to revising or revamping any work that had already been built. The time involved in making that estimate was not over a day or two.

Mr. MAY. A day or two?

Mr. ERICKSON. That is right.

Mr. MAY. Thank you, Mr. Erickson. Could you step aside for just a moment?

Mr. SCHERER. Why don't you ask him about this second estimate we have got in the record now, where they asked for definite information on increasing it from 14 to 16 and from 16 to 18 and from 18 to 20 and from 20 to 22 and from 22 to 24? That is what I asked.

Mr. MAY. Mr. Erickson, how long did it take to draw up that estimate, the one submitted in August?

Mr. ERICKSON. The second estimate?

Mr. MAY. Yes, Mr. Erickson.

Mr. ERICKSON. We probably spent not over a week.

Mr. MAY. One week?

Mr. ERICKSON. And what was done in that case was to take some typical structures and evaluate the increase in cost due to the increase in height. And all we furnished Mr. Chacey with at that time were some percentages that he might apply to any advantage that he might

be able to, to illustrate to his people about what money might be involved in making these changes from one dimension to another.

Mr. MAY. Yes, Mr. Erickson. These were not detailed estimates?

Mr. ERICKSON. They were not detailed estimates as such.

Mr. MAY. They were drawn up simply to indicate the general area of cost.

Mr. ERICKSON. That is correct.

Mr. MAY. Thank you, Mr. Erickson.

Mr. SCHERER. Thank you.

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY—Resumed

Mr. MAY. Mr. Chacey, we have heard that you received a letter on July 24 from the Deputy Chief of Staff for Operations, so that you had heard from the various branches of the military. What action did the Chief of Transportation's Office take thereafter in connection with the resolving of that problem?

Mr. CHACEY. Some of the things we did were those we just discussed with respect to obtaining more specific information on the cost of increasing these vertical clearances. You will recall, in the Deputy Chief of Staff for Operations' communication, he suggested we consider a 20-foot vertical clearance. This we had not discussed in detail with respect to costs with the Bureau of Public Roads. I should say there was an awful lot of telephone conversation and some meetings with Army, Navy, and Air Force representatives on this subject, and these were not the only two or three dimensions we discussed. There were other dimensions.

So we felt, at this time, it was desirable to get a range of vertical clearances so that the Department of Defense agencies would have this information available.

Mr. MAY. When did you take the step to resolve this problem, Mr. Chacey?

Mr. CHACEY. Sir?

Mr. MAY. When did you take the next step to resolve the problem with the Deputy Chief of Staff for operations?

Mr. CHACEY. One of the things we did was to seek additional information on the costs. I don't believe we have a record of the day we asked the Bureau of Public Roads for this information they furnished us in the latter part of August.

Mr. MAY. I was thinking of your discussions with the Deputy Chief of Staff for Operations. You heard from them on July 24 and then discussed this matter with them. When did you discuss it with them?

Mr. CHACEY. We discussed it with them on the telephone on several occasions, and then we had a meeting with some of them.

Mr. MAY. When did you have the meeting? Maybe October 20, Mr. Chacey?

Mr. CHACEY. The communication—we later, then, formally sent to the Deputy Chief of Staff for Operations on October 22, 1958, a communication. As I indicated earlier, we had discussed it on the telephone several times and a few days before that—I don't have

the date—we had gone over and sat down with a couple of the officers and reviewed this overall problem. October 20.

Mr. MAY. Why did it take from July 24 to October 20 to sit down with these people of the Deputy Chief of Staff for Operations?

Mr. CHACEY. Of course, as I have indicated these things—there was not much point in sitting down and talking to them until we had some more specific information on what we were talking about insofar as costs were concerned.

Mr. MAY. You had that on August 27.

Mr. CHACEY. We had discussed all this some, informally, with our Navy and Air Force people. We had discussed it further on the telephone with some of them in the Office of Deputy Chief of Staff for Operations. I think one of the contributing factors is that you have one man working on these things who has a lot of other priorities, and sometimes these papers slide back and get on the bottom of the stack; you think you are going to do it today and you don't do anything but answer the telephone, so that the time goes faster than you think, unfortunately. When you look back—as I said yesterday, you look back on some of these spans of 2 or 3 months and it does not look quite right that it should take that long, but when you are trying to do as many things as we have to do, with one or two people to carry on the activity, it just takes more time than we like ourselves.

Mr. MAY. Thank you, Mr. Chacey.

Mr. SCHERER. That sounds like my office.

Mr. MAY. On November 8, 1958, did you finally receive an answer from the Deputy Chief of Staff for Operations?

Mr. CHACEY. Yes, sir. We received a reply on November 8, 1958, from the Deputy Chief of Staff for Military Operations, responding to our request that they, at that level, reconcile the Department of Army's position.

Mr. MAY. What was the Department of Army's position?

Mr. CHACEY. In the reply the Deputy Chief of Staff for Operations stated:

> A review of the attached correspondence indicates that justification appears adequate for 17 feet of clearance. It is considered that the Department of the Army's recommendation should be modified to request 17-feet clearance.

The modification I might indicate for the record was from the earlier communication suggesting 20 feet.

Mr. MAY. So that represented the official position of the Army?

Mr. CHACEY. Yes, sir.

Mr. MAY. You had heard from the Navy, which said that 14 feet would be adequate, and you had heard from the Air Force, which suggested 16 feet. Now you heard from the Army, which claims a position of 17 feet. What else remained to be done to arrive at an official position of the Defense Department?

Mr. CHACEY. Before the Chief of Transportation could act on behalf of the Department of Defense, it was necessary to reconcile the three military departments' recommendations or positions.

Mr. MAY. How did you go about that, Mr. Chacey?

Mr. CHACEY. Well, there was a series of meetings and discussions with them.

Mr. MAY. With whom?

Mr. CHACEY. With the various representatives of the military departments.

Mr. MAY. Maybe we are getting a little bit ahead of our story, Mr. Chacey. Did you speak with Dr. Wernher von Braun on this matter?

Mr. CHACEY. I did, sir.

Mr. MAY. When did that take place?

Mr. CHACEY. December 1958.

Mr. MAY. What did Dr. von Braun have to say on the matter?

Mr. CHACEY. I think the most significant thing he had to say, and the thing we are primarily seeking, was assistance in identifying a specific vertical clearance that would be of the greatest benefit, or that clearance potentially required for the scientists in the development of missiles and missile systems. Dr. von Braun advised that they could not identify a specific dimension that would be of particular significance in the design of missiles. This placed us back in the position of judgment. He did request that the highway officials give the scientists as much room as they could economically to work in.

Mr. MAY. Did Dr. von Braun make any other suggestions of possible modes of transportation for missiles?

Mr. CHACEY. Yes, sir; in a general discussion. Of course, this was a very informal discussion. I might add in connection with this he mentioned the desirability of constructing a railroad from the Atlantic to the Pacific with unlimited clearances. He also a time or two referred to their ability to bypass or go around limiting structures. This, to those of us who had been closer to this from the transportation standpoint, conveyed the basic feeling that we had inadequately conveyed to him the potentialities of continuing to build thousands of 14-foot vertical clearance structures.

Mr. MAY. Just to dwell on that a little bit, there has been some talk of the possibility of bypassing structures. Could you tell us the problems you would encounter?

Mr. CHACEY. Well, of course, during World War II and in the past, and up to now, and I think in the future for sometime, we will be able to bypass many of the limiting structures, but I believe that as we continue to increase our design and construction of full control access highways, that this restriction will increasingly prohibit or delay movements, and ultimately will restrict the movements by highway transport to very limited areas upon the completion of thousands of miles of freeway systems.

Mr. SCHERER. You mean if it is limited to 14 feet?

Mr. CHACEY. That is correct. Things we move today in the vicinity of 14 and 15 and 16 feet such as the 200-inch lens and double-decker buses—we have moved things like that and it has not been too difficult by routing to do that. But as time goes on, I think we are going to find that many of the movements which we have taken for granted and with a little inconvenience will ultimately become impossible of accomplishment, and you will be more restricted——

Mr. SCHERER. It is because of that feeling that you finally got around to recommending 16 feet. Is that right?

Mr. CHACEY. Well, that contributed to it.

Mr. SCHERER. You just said it.

Mr. CHACEY. That is right.

Mr. MAY. You originally recommended 17 feet.

Mr. CHACEY. Sir?

Mr. MAY. The Chief of Transportation's Office originally recommended 17 feet. It has only recommended 17 feet. Is that true?

Mr. CHACEY. That is correct.

Mr. MAY. Mr. Chacey, did Dr. von Braun mention the Interstate System at all? Did he have any suggestions?

Mr. CHACEY. I missed a word or two of your question.

Mr. MAY. Did Dr. von Braun have any suggestions relating to the Interstate System? Did he suggest that the Interstate System be built on top of other roads, which would give you unlimited vertical clearance?

Mr. CHACEY. I am not certain. I think perhaps that was discussed. I know it is not the first time it was discussed. It has been the subject of considerable discussion since September 1959, and almost any time you bring up this subject you bring up the same cycle of alternatives to increasing our vertical clearance. So I would not say. I don't recall the specific discussion with respect to the Interstate System, but I think perhaps it was.

Mr. MAY. And this was what Dr. von Braun asked, that the scientists be given as much vertical clearance as it would be economically possible to do?

Mr. CHACEY. He did. Those are, as near as I can recall, his exact words.

Mr. SCHERER. That is the big question—economically feasible.

Mr. MAY. Dr. von Braun mentioned also that, of course, would be helpful to the designers.

Mr. CHACEY. Sir?

Mr. MAY. Dr. von Braun mentioned that that would be helpful to the designers of medium-sized missiles.

Mr. CHACEY. That is correct. And let me add one other thought I know we discussed. In this discussion, in view of some of the space vehicles that Dr. von Braun is concerned with, there was recognition of the fact that at some place we had to recognize the fact that these things would have to be built in sectionalized form and moved into assembly areas, and there assembled and fired, or placed into space.

Mr. MAY. Did you later discuss the vertical clearance problem with representatives of the Department of Defense shortly after meeting with Dr. von Braun?

Mr. CHACEY. Yes, sir; I did.

Mr. MAY. When did that take place?

Mr. CHACEY. I believe that was January 7, 1959.

Mr. MAY. With whom did you meet at that time?

Mr. CHACEY. Mr. Earl Smith, the Director of Transportation, Communications and Petroleum Supply, Assistant Secretary of Defense for Supply and Logistics; and Mr. Hicks, Office of the Assistant Secretary of Defense, Research and Engineering.

Mr. MAY. What took place at that meeting?

Mr. CHACEY. At that meeting we reviewed the material and information that we had gotten from the various military departments, my discussions with Dr. von Braun, and the draft of a proposed letter representing the views of the Department of Defense in the matter of vertical clearance requirements.

Mr. MAY. Did you also review a draft of a proposed letter from General Besson to the Federal Highway Administrator?

Mr. CHACEY. We did.

Mr. MAY. What was decided upon at that meeting?

Mr. CHACEY. It was decided at that meeting that we should discuss this informally with the Bureau of Public Roads, and that subject to unforeseen problems this seemed like a reasonable solution.

Mr. MAY. I notice you mention informally. Was this an informal meeting with Mr. Smith and Mr. Hicks?

Mr. CHACEY. It was. It was an informal briefing or review. It does not mean we cannot discuss these things with them any day in the week we want to, but when you present a briefing at the Secretary of Defense's office there is a difference between a formal or informal briefing or review.

Mr. MAY. What would have to take place in order to bring about a formal meeting with Mr. Smith or Mr. Hicks?

Mr. CHACEY. Normally there is a command channel you follow, and it goes from the Chief of Transportation or from the Chief of the Technical Service concerned to the Deputy Chief of Staff for Logistics.

Mr. MAY. Will you describe in detail the steps you have to take?

Mr. CHACEY. Well, it depends on the importance, or, not necessarily the importance, but the level of responsibility in the military department, on the extent to which these briefings have to be prepared and reviewed by each level of command.

In this instance, to answer your question, you would brief somebody in the Office of Deputy Chief of Staff for Logistics, and he would make the determination as to whether it had to go to the Chief of Staff or not, and whether it could go to the Assistant Secretary of the Army for Logistics, and from him to the Assistant Secretary of Defense for Logistics, which is the office that Mr. Smith was representing.

Mr. MAY. How long might it take to bring about a formal meeting?

Mr. CHACEY. That is a pretty difficult question to answer. It varies. You have a lot of very busy people that are in that channel that you have to——

Mr. MAY. Based on your experience, Mr. Chacey.

Mr. CHACEY. If it is important enough and gets the attention of everybody, and everybody along the channel thinks it is of the highest priority, it can be done in a matter of days. If it gets on the bottom of the itinerary, why, it could take 2 or 3 weeks.

Mr. MAY. Why did you discuss this matter informally with Mr. Smith and Mr. Hicks?

Mr. CHACEY. Well, one is because of a direct working relationship with Mr. Smith's office in matters pertaining to highway system development; and, two, the fact that the Chief of Transportation actually is authorized to represent the Deputy Chief of Staff for Logistics in such matters; and, because of the time element. We felt there was not justification to consume all of these people's time all the way through the channel, and we were advised to go ahead directly with Mr. Smith and review this.

Mr. BALDWIN. If I may ask this question.

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Then that would indicate you actually, in a case where time requires it, apparently have the alternative of endeavor-

ing to make immediate arrangements through an informal contact, as compared to going through all of this rigmarole you recite for a formal contact. Is that right?

Mr. CHACEY. That is correct.

Mr. MAY. Mr. Chacey——

Mr. SCHERER. Just a second. Pardon me. These people with whom you have had these discussions both formal and informal, are all career people, aren't they; they have been in the Government service for many years?

Mr. CHACEY. Most of them are. Mr. Smith was not. Mr. Smith actually has retired since that time. He came to the Department of Defense in 1953, or something like that, but he had been there quite a little while. He was not entirely new to the subject.

Mr. SCHERER. With the exception then of Mr. Smith, most of the men you are talking about in these lower echelons are career people?

Mr. CHACEY. Yes, sir.

Mr. SCHERER. They had been with Government many years?

Mr. CHACEY. They are military. A lot of them are military officers.

Mr. SCHERER. Military, and some civilians like yourself?

Mr. CHACEY. Some civilians and some military.

Mr. SCHERER. When did you come to the Government, Mr. Chacey?

Mr. CHACEY. Well, when I got out of the Army in 1946 I stayed with the Chief of Transportation in a civilian capacity.

Mr. SCHERER. These procedures that you are talking about have been in effect with some modifications for a number of years, have they not?

Mr. CHACEY. Yes, sir.

Mr. MAY. Mr. Chacey, did you thereafter discuss the matter with the representative of the Navy and the representative of the Air Force?

Mr. CHACEY. Yes, sir. On January 15, 1959 we met with liaison representatives of the Navy and Air Force and discussed this problem.

Mr. MAY. Who are they, Mr. Chacey?

Mr. CHACEY. Mr. Nelson Brown of the Bureau of Yards and Docks, Department of the Navy; and Mr. Earl Williams of the Office of Director of Transportation, Office, Chief of Staff, Army.

Mr. MAY. Mr. Williams represents the Air Force.

Mr. CHACEY. Excuse me. The Air Force.

Mr. MAY. What took place at that meeting?

Mr. CHACEY. We reviewed this entire problem with a view to learning if the Department of the Navy and Department of the Air Force were agreeable to taking a Department of Defense position of 17 feet for a vertical clearance requirement. The Department of the Navy took the position that they did not have a requirement for it but that they would support it from the standpoint of an overall Department of Defense need; and in general that was the position of the Department of the Navy and the Department of the Air Force representatives.

Mr. MAY. So as of this date, January 15, 1959, there was established an official Department of Defense position in relation to this matter and the official position was that a 17-foot vertical clearance would be required. Is that correct?

Mr. CHACEY. The statement that it was an official position is not correct. There was established a tentative position of the Department of Defense pending review by the Bureau of Public Roads because of the implications or ramifications that there were in this problem. In other words, all agreed before the Department of Defense took an official position that it was desirable to review this informally in some detail with the Federal Bureau of Public Roads to insure that they who were responsible for administering this program could administer this as we had proposed it in our draft letter, with efficiency and effectiveness, and had no alternatives which would be more economical or a better solution to the problem.

Mr. MAY. If the 17-foot position represented the needs of the military and the needs of the Defense Department—is that true? Did it?

Mr. CHACEY. The 17 feet represented the agreed to tentative position or recommendation of the Department of Defense. It represented the three military departments' views at that time.

Mr. MAY. And that was an expression on the part of the military departments?

Mr. CHACEY. That is correct.

Mr. MAY. That 17 feet, the 17-foot vertical clearance, would be required to satisfy the needs of the Defense Department. Is that true?

Mr. CHACEY. I would like to make it clear that in working this paper on this date—when we take official action on behalf of the Department of Defense it does not become an official action until we have the names on the piece of paper. Nothing—as we operate, representing the three military departments—nothing is official until someone on behalf of the Department of the Air Force, someone on behalf of the Department of the Navy, signs a paper. As of this date they had not signed it.

I would not be fair to say they had officially concurred, because they have not. Informally they had agreed to this tentative position, subject to any good reason or alternative that could be produced by the Federal Bureau of Public Roads.

Mr. MAY. Is there any question that the Department of the Army stated officially to you that their need was for a 17-foot vertical clearance? That was their official position, was it not?

Mr. CHACEY. There is no question in my mind but that the Department of the Army felt a 17-foot vertical clearance was justified.

Mr. MAY. The Department of the Navy, as represented by Nelson Brown, stated that although they did not need more than 14 feet, they would concur in 17 feet?

Mr. CHACEY. They did.

Mr. MAY. Earl Williams, representing the Air Force, stated although they suggested 16 feet, the Air Force would concur in 17 feet?

Mr. CHACEY. Yes, sir. But in all fairness, this was with the understanding that we were going to discuss it informally with the Bureau of Public Roads before we presented them with an official paper for their official concurrence.

Mr. MAY. But it was the considered judgment of the people involved that the military services needed 17 feet to suit their needs in spite of the fact that nobody had signed the paper?

Mr. CHACEY. As I have stated, it was the judgment of these people that we had contacted that it was a desirable step to be taken. I could not say—it would not be fair for me to say they officially stated there was a requirement for 17 feet. There is no question as to the feeling that it was desirable.

Mr. BALDWIN. If I may ask a question here.

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. If I understand you correctly, what you have stated is that the Army, the Navy, and the Air Force, and each individually, indicated that their requirements would be different. The Navy said as far as they were concerned 14 feet was adequate.

Mr. CHACEY. That is right.

Mr. BALDWIN. The Air Force said as far as they were concerned 16 feet would be adequate.

Mr. CHACEY. That is correct.

Mr. BALDWIN. The Department of the Army said as far as they were concerned they would prefer 17 feet. And at that point they all determined to go and have an informal discussion with the Bureau of Public Roads before they took any formal position as far as the Department of Defense is concerned. Isn't that about it?

Mr. CHACEY. This is the way we presented it to them: That if—we were trying to learn whether the Navy and Air Force would support the 17-foot vertical clearance position on behalf of the Department of Defense. They indicated to us that they would—with the understanding, and this was made clear at every meeting we had before this—with the understanding that this was to be reviewed with the Bureau of Public Roads before an official Department of Defense position was established.

There is no question as to feeling, Mr. Baldwin, as to a desirable vertical clearance at that time.

Mr. MAY. What was it, Mr. Chacey?

Mr. CHACEY. Sir?

Mr. MAY. What was it?

Mr. CHACEY. Seventeen feet.

Mr. MAY. At the meeting with Nelson Brown and Mr. Earl Williams, did you also review the draft of the proposed letter from General Besson to the Federal Highway Administrator requesting 17 feet?

Mr. CHACEY. Yes, sir.

Mr. MAY. May we present this letter to Mr. Chacey?

(Document handed to Mr. Chacey.)

Mr. MAY. Mr. Chacey, is that a true copy of the original draft?

Mr. CHACEY. I believe it is. I want to make this statement: That during the period that we were meeting with Mr. Smith and the Navy and Air Force people, there were a few words changed in it. They were not of major significance. But there was this—I believe this is, but it may not be verbatim, word for word, the copy that the Bureau of Public Roads received. It is substantially the same letter.

Mr. MAY. We will learn later, Mr. Chacey, that we received that from the Bureau of Public Roads.

Mr. CHACEY. All right.

Mr. MAY. It is their copy.

Mr. CHACEY. All right.

Mr. MAY. Will you read that letter, Mr. Chacey?

Mr. CHACEY. This is to Mr. Bertram D. Tallamy, Federal Highway Administrator:

At the time the geometric design standards for the National System of Interstate and Defense Highways were established, it appeared that the 14-foot vertical clearance standard would be adequate for the movement of items essential to national defense. However, since that time there has been a greater realization of the potentials and importance of space flight, guided missiles, and mobile defense and of the requirements for transportation of items associated with these new concepts. There has also been a greater realization of the restrictive effect a 14-foot vertical clearance will have on transportation when construction of the Interstate System is completed.

Although it is virtually impossible to predict future military requirements accurately, technology is advancing so rapidly that the space age is already demanding larger payloads and more powerful rocket motors, which will mean larger physical dimensions than our missiles have today. Future technical breakthroughs could mean even larger sizes of military hardware. If highway structures are built to standards that meet only requirements for presently developed and standardized items, the movement of future items may be restricted and potential national defense efforts may be seriously affected.

At the present time there are items requiring clearance higher than the approved standard. In the past it has been possible to move oversize items by finding alternate routes which would go around obstructions. As the routes of the Interstate System are constructed and additional freeways, expressways, and other primary routes are developed, it will become more difficult and eventually impossible to move vehicles and loads exceeding 13½ feet in height any appreciable distance.

In view of the projected life of the Interstate System and the seriousness of the limitation placed on the system by the vertical clearance at structures, it is believed that a modification in the vertical clearance standard should be made. For a relatively small investment the usefulness of our principal highway network may be increased greatly.

This problem has been reviewed extensively by the officials in that Department of Defense concerned with these matters. It is the considered opinion of these officials that the National System of Interstate and Defense Highways should be built with a minimum vertical clearance of 17 feet. However, at urban areas, where alternate or circumferential routes with a minimum vertical restriction of 17 feet are available around the built-up areas, the present vertical clearance standard will be adequate for the foreseen needs of national defense.

It is realized that many rural structures have already been completed based on the 14-foot vertical clearance standard and that many others are designed or under construction. It is not expected that these structures should be modified at this time. Also, in view of the satisfactory operation of the procedures agreed to by the States and the Department of Defense with respect to the movement of oversize and overweight vehicles, it is not intended that the recommended modification of the geometric design standards for the National System of Interstate and Defense Highways should imply need for a change in State laws with respect to height limitations imposed on vehicles.

It is hoped that you will be able to effect the necessary coordination to revise the geometric design standards for the National System of Interstate and Defense Highways to provide a minimum 17-foot clearance for the rural and circumferential Interstate System routes and for those routes of the system passing through urban areas for which there are no alternate routes built to comparable structural standards.

Sincerely.

Mr. MAY. Is there any signature on that?

Mr. CHACEY. No, sir. There is not on this. It was intended for General Besson's signature.

Mr. MAY. Who prepared the letter, Mr. Chacey?

Mr. CHACEY. Sir?

Mr. MAY. Who prepared the letter?

Mr. CHACEY. I played a major part in its preparation. There was some modification, as I indicated earlier, in conferences, and such as that.

Mr. MAY. But the letter in essence, though, was prepared prior to your meeting with the Department of Defense representatives on January 7, 1959?

Mr. CHACEY. Oh, yes.

Mr. BALDWIN. May I ask a question? Was this a draft letter then? Is that the effect of it?

Mr. CHACEY. It is a draft. That is correct. Definitely.

Mr. BALDWIN. And it was never actually signed and mailed?

Mr. CHACEY. This letter as it is, as I read it, was never signed.

Mr. BALDWIN. I see.

Mr. WRIGHT. It was delivered to the Bureau of Public Roads. Is that correct?

Mr. CHACEY. That is correct.

Mr. WRIGHT. In other words, you were saying to the Bureau of Public Roads, "What would be your reaction if we were to write you thusly in answer to your question?"

Mr. CHACEY. Well, we worked very closely together on these problems. It is not an easy problem and I am sure before this hearing is over you will realize it, as well as we. The question of selecting certain routes rather than the entire system, the question of depressing the median to provide bypasses, and redesign of interchanges so that you could get around the structures, were all subjects of discussion and considerable thought. We felt that it was proper to give the Bureau of Public Roads a chance to go over this and to make sure that when we came out with something it was the best that we could jointly visualize in the public interest.

Mr. WRIGHT. May I ask a question or two here, Mr. Chairman?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Did I correctly understand from your reading of this proposed letter for General Besson's signature that the Department of Defense was contemplating a request that future overpasses be built to a minimum standard of 17 feet, but was not contemplating any position that previously built overpasses be reconstructed or altered to a 17-foot standard? Is that what he was saying?

Mr. CHACEY. Well, at this time that is what he was saying.

Mr. WRIGHT. Here is the point——

Mr. CHACEY. This is the problem we are confronted with. It was a matter of breaking this overall problem down into segments and doing something specifically with what was most serious and most urgent. In some of our earlier discussions it was felt all we were doing was further complicating and delaying this one important decision as to what we were going to do with the structures from here on out if we injected the problem of existing structures, and that sort of thing. They are already built. They are water over the dam now. At this time we felt that we should not concern ourselves with that.

In our discussions, I should add, it was informally agreed, I believe—it was my understanding—that upon a determination of what the future vertical clearance should be for the Interstate System, the States, the Bureau of Public Roads, and we would jointly study these structures that had been completed, or those that had been integrated into this system, and arrive at what was considered to be, or determined to be, the most economical and effective solution to that problem at that time.

Mr. WRIGHT. If you need a 17-foot clearance to transport a piece of military hardware from one point to another across the country, is it adequate to have some of the structures erected to a minimum vertical clearance of 17 feet, while others continue to exist at 14 feet along that same route?

Mr. CHACEY. Well, I think that is a very difficult question to answer. In my judgment there would probably be some of them that we will never touch. In my judgment there will probably be some of them that will have to be raised, but I see no—personally I saw no need to further complicate this one important decision of vertical dimension by trying to solve that one at the same time, and before we made this other decision.

Mr. WRIGHT. In other words, you were trying not to cross that overpass yet?

Mr. CHACEY. We were trying to cross the bridges as we got to them.

Mr. WRIGHT. Thank you.

Mr. SCHWENGEL. Mr. Chairman.

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. Could you tell me, sir, how much transportation, that is, how much of the defense transportation now is dependent upon trucks and highways?

Mr. CHACEY. Well, I don't know how to measure it. There is a difference in miles, importance, and money.

Mr. SCHWENGEL. Volume. We will say ton-miles. Have there been any studies made that will bring out this point at all? Have you considered this point?

Mr. CHACEY. Definitely on several occasions we have gone to our military traffic management people and asked them for information. Some time ago we were commenting on the Interstate System and the percent of increases over a period of years of the volume of traffic. I believe at one time we did develop some information on it from a tonnage standpoint. We have from a dollar standpoint. And, after all, I think generally that is a pretty good measure. It is not or does not answer all of the questions, but it is indicative.

Mr. SCHERER. Are you talking about the tonnage that is involved in these clearances, or just regular tonnage?

Mr. SCHWENGEL. I am getting to that next. I want to get the relationship to the total and then find out what percent is involved here, and how much of the total is affected.

Can you tell me what percent of the ordance or defense transportation is dependent on the highways and trucks?

Mr. CHACEY. Oh, I can't do that. I think that the information could be developed on a dollar basis, but this is quite a—we have one traffic management agency that routes commercial traffic for the Army, Navy, Air Force, and Marine Corps. It is quite a large volume of traffic. I am sure you realize that.

Mr. SCHWENGEL. Would they have these figures?

Mr. CHACEY. I do not know to what extent they can separate it within a reasonable time. They have pretty complete information, but some of this is quite a tough job of going back and getting it off bills of lading, and that type of thing. They have some indication of this volume, if that is all you want.

Mr. SCHWENGEL. Yes.

Mr. SCHERER. The amount of defense traffic that is involved with these clearance problems is infinitesimal, though, compared to the total amount of military traffic that moves over these highways day in and day out, is it not?

Mr. CHACEY. I do not think there is any question but what the oversized movement is a small percentage.

Mr. SCHERER. That is what I mean.

Mr. CHACEY. Of the overall tonnage that is moved in transportation in support of the Military Establishment.

Mr. SCHERER. When you compare it to the total.

Mr. CHACEY. Like the subject we were discussing yesterday of oversized items. There are thousands of items that are not oversized. There are many of them. There are a lot of them. But they are only the oversized items and it is a small percentage of the total tonnage moved.

Mr. SCHWENGEL. Would it be as much as 5 percent?

Mr. CHACEY. Oh, it would be really wrong for me even to give you a guess of any kind.

Mr. SCHWENGEL. Do you have any facilities to get that figure for us?

Mr. CHACEY. Tonnagewise?

Mr. SCHWENGEL. Yes, tonnagewise.

Mr. CHACEY. I don't in my office. We can request from the Military Traffic Management Agency. I will tell you what we—maybe this will not answer your problem, but I will tell you the way we pursued it. I have referred to this arrangement we have with the States for issuing permits for special military movements. We went to these people and asked them for an indication of their outsize movements by mileage to try to get hold of this, or some indication of the activity. In addition to that, we have obtained or gotten some indication of the overall defense volume of traffic moneywise that is on our public highways. It would be quite an undertaking to pick out of this—and I am afraid we will have to go into the bills of lading to do it, and of course that goes into hundreds of thousands of them when you skip around to find the one.

Mr. SCHERER. Will the gentleman yield?

Mr. SCHWENGEL. Yes.

Mr. SCHERER. The statement you just made causes me to pose another question. Couldn't we get at this thing by considering the number of permits you requested for oversized objects?

Mr. CHACEY. That is what we started out to get. I am not certain that the information is limited to that, but it is indicative, and the same story of the problem of communications was concerned. While we asked for those where they issued special permits, I am not sure by the time it got to the field that we got only that. I'm not sure some of the other routings were not included, but they are accurate from the standpoint of the number of movements that were made. These movements were all made and the mileage that was shown here is accurate. In 1958 there were 1,015 of these movements.

Mr. SCHERER. Oversized?

Mr. CHACEY. We cared nothing about weight or width, but asked them solely about something 13½ feet high or over.

Mr. SCHERER. 1,000-and-what? How many?

Mr. CHACEY. 1,015 in 1958 was the information we got from our Military Traffic Management Agency, our Army Area Commands who are responsible for military operations, and the Navy and Air Force.

Mr. SCHERER. That was for 1 year?

Mr. CHACEY. That was for the calendar year 1958.

Mr. SCHERER And that was for permits requested of the States to move that oversize material?

Mr. CHACEY. It was requested by the military departments. This does not include something that some contractor——

Mr. SCHERER. I understand that.

Mr. CHACEY (continuing). Moved for the Department of Defense in the carrying out of a contract, which goes on back and back and back.

Mr. SCHERER. You indicated yesterday, Mr. Chacey, or it is my recollection that you indicated when counsel was reading to you some of these oversized items, that there were so few of them thay you just used different routes.

Mr. CHACEY. Well, the point is that we have been able to move some of them quite a distance. I will read this to you if you would like it. It is summarized here. From 13½ to 14 feet there were 482 movements. From 14 feet to 15 feet there were 337 movements. From 15 feet to 16 feet there were 165, and 16 feet and over there were 31.

Mr. SCHERER. All right. At any rate, you succeeded in moving these things on our present road system, did you not?

Mr. CHACEY. That is correct.

Mr. SCHERER. Although they were oversized?

Mr. CHACEY. That is correct.

Mr. SCHERER. You did that, of course, I understand, at great inconvenience by finding different routes to move them over. Is that right?

Mr. CHACEY. There is no question but what it was inconvenient for some of the larger ones. Some of these lower dimensions and shorter distances may not have been any very great inconvience. The significance——

Mr. SCHERER. There are very few of these oversized, and I am referring to vertical things, shipments that you actually have been stymied in and have been unable to move?

Mr. CHACEY. To my knowledge there have been very few movements that have not been accomplished.

Mr. SCHERER. That have not been accomplished. But there has been a delay?

Mr. CHACEY. There has been some delay in these movements.

Mr. BLATNIK. Will the gentleman yield?

Mr. SCHERER. In order to accelerate these limited movements we want to increase the vertical clearance.

Mr. BLATNIK. This is what disturbs me.

Mr. CHACEY. Yes, sir.

Mr. BLATNIK. You have made clear that the clearance was not much of a problem before the Interstate System and the Defense System was under construction. We have been given the impression that the highway system was being constructed for interstate commerce and for defense purposes in order to expedite and upgrade, not only civilian, but defense movements. In other words, would our defense

purposes have been served better by the old and existing roads without the Interstate System being constructed? As you yourself told us, with these hundreds of thousands of overpasses being built year by year, you are having more and more difficulty in arranging for the movement of these oversized pieces which, while few in number and in tonnage, I admit, still are very essential.

Mr. SCHERER. I want to get this up as high as economically feasible, as we said, to serve the Defense System, but I want to get a true picture here. I am just like you. I wish I had known about this problem sooner because some people did know about it sooner, obviously.

Mr. BALDWIN. I think that is an important question for the gentleman to answer, Mr. Chairman. He has not answered your question.

Mr. BLATNIK. Am I correct in my conclusion from your testimony?

Mr. CHACEY. As I recall it, your statement that the Department of Defense was better off without the Interstate System than they are with it is, in my judgment, not correct. No. 1, there have not been too many miles of Interstate System opened up for traffic to date, and it has not had a plus or a minus effect on what we have been doing in the past. This problem is a small percent of the overall transportation problem.

Mr. BLATNIK. Weren't you saying, and did you not say—and I hope the record will show it that you said earlier this morning—that while you were not having too much difficulty now, because the real construction had not yet really gotten underway on the Interstate System, that you began to visualize more and more of these overpasses being built and you became concerned about the increasing problem that you would have in the transportation of these oversized military pieces. Is that correct?

Mr. CHACEY. That is correct. That is correct. There is no question in my mind, as we have stated on many occasions, that if we complete the Interstate System and the freeways of the States, we will increase the difficulty in moving oversized items which in the past we have had some difficulty with, but have been able to accomplish.

Mr. WRIGHT. Mr. Chairman.

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. In that specific connection, is it not true that the National System of Interstate and Defense Highways was supposed to have been designed to anticipate, insofar as possible, the defense and commercial traffic needs for the year 1975?

Mr. CHACEY. That is correct.

Mr. WRIGHT. And is that one of the great things you have been trying to take into consideration as you realize that more and more of this oversized defense hardware is coming into the picture?

Mr. CHACEY. That is correct.

Mr. WRIGHT. So, therefore, the crucial question is not altogether what volume of the total traffic it has handled to date, but what the needs will probably be for the defense of our country and the movement of defense hardware by 1975.

Mr. CHACEY. I think that is an important point, because matters such as the mobile defense, and dispersal of our industry, and such as that, under national emergencies are not problems that we were worrying about very many years ago. Being human beings, it is not

easy to turn around and go in a different direction all at once, especially when you are trying to express the thinking of a big department, or an agency, or something of that kind. As individuals we can turn quickly, but if we followed individuals in all of our actions we would get on an awful lot of tangents. So it is necessary to amalgamate the thinking of many people so as to make sure that you are on a sound course.

Mr. WRIGHT. But we do have the problem now, and it is already a problem, as evidenced by your discussion with these other people representing the various services.

Mr. CHACEY. Well, I think we are moving these items today. We have moved more of them in 1959 than we moved in 1958. But the point is, we are trying to exercise some foresight here; and while we were a little slow perhaps in coming to this realization as an agency, we are taking the position that what is in the public interest should be stated regardless of the fact that we did not foresee it in 1956.

Mr. WRIGHT. And in January of 1959, when this letter which was the subject of our immediate discussion, was drafted or was presented to this group for the signature of General Besson, you testified a moment ago that your main, overriding consideration at that time was to try to press this thing on to a decision for the future, separated from the problem of trying to decide what to do about those that had already been built, in order to speed it to a decision.

Mr. CHACEY. That is correct.

Mr. WRIGHT. I can fully sympathize with that. You had been concentrating on and worrying about the problem for over a year, since December 1957, when you undertook discussions with Mr. Siegle and still reached no decision. Is that correct?

Mr. CHACEY. That is correct.

Mr. WRIGHT. Meanwhile, I wonder how many of these overpasses had been built in that year? Do you have any notion as to that?

Mr. CHACEY. I don't know. I think Public Roads would be the proper source for that information.

Mr. WRIGHT. Very well. I will withdraw the question from you then. You would say, though, that it costs considerably less to build an overpass to the adequate standards initially in its construction than to go back and reconstruct it to the desired standard after it has already been constructed to inadequate heights?

Mr. CHACEY. There is no question about that. I think we have learned that lesson several times.

Mr. WRIGHT. Therefore, the longer a resolution of this decision was delayed, the more costly in the long run it would be if we were to decide that any of the overpasses would have to be reconstructed.

Mr. CHACEY. If we go back and rebuild many of the ones that have been completed, there is no question but that it will result in a more expensive solution.

Mr. WRIGHT. Thank you.

Mr. BLATNIK. Mr. May.

Mr. MAY. Mr. Chacey, must not the thinking of the Defense Department be always devoted to the emergency situation?

Mr. CHACEY. Primarily that is the only thing they exist for.

Mr. MAY. Therefore, the fact that a very few pieces of equipment might travel over the highways today is really not pertinent. What

you are concerned with is how many pieces of equipment can travel over our highways in an emergency situation. Isn't that it?

Mr. CHACEY. That is the primary concern. That is correct.

Mr. MAY. In the emergency situation, time is of the essence.

Mr. CHACEY. In many instances it is very critical.

Mr. MAY. Is that not really the need for this defense system? To enable the military equipment to move expeditiously and quickly over our Nation's highways?

Mr. CHACEY. Military equipment and supporting equipment.

Mr. MAY. Anything that might be related to it.

Mr. CHACEY. Anything related to the Nation's defense is necessary. What I am thinking about is weapons that are in the dream stage and are not effective.

Mr. MAY. Therefore, the thinking of the Defense Department should always be that we will have an adequate system, a system with vertical structures adequate to accommodate types of equipment that might travel on our highways in an emergency situation. Is that it?

Mr. CHACEY. That is our objective.

Mr. BALDWIN. May I ask one question?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Mr. Chacey, I think you pointed out yesterday from time to time you have the problem of moving the same kinds of items in foreign countries. For example, we have had American troops in various allied countries around the world at different times in the past in connection with wars, and they have had to go into a lot of other countries. Could you provide for us, for the record, the highway clearances in the other countries of the world, so that we can see what kinds of problems we have, and the plans you are making to solve these problems when you have to move these things in France, or West Germany, or some of the other countries?

Mr. FALLON. Will the gentleman yield?

Mr. BALDWIN. Yes.

Mr. FALLON. I think I asked you the question yesterday what was the general vertical height of bridges overseas, and I think you said 12 to 13 feet.

Mr. CHACEY. I believe the question was a very general statement, or a very general question, which I could not answer because it varied. And somebody asked me what the vertical clearance on the Antobahn was, I believe, and my answer was it was 14.8. It is my understanding——

Mr. SCHERER. That is unusual, though.

Mr. CHACEY. Sir?

Mr. SCHERER. That is unusual.

Mr. CHACEY. There is quite a variation and our problem overseas is principally because of this. Some of them—I know that some of the vertical clearances are in excess of 14 feet in some of the areas, but there remain more restrictive tunnels and overpass structures in much of the European countries than we have.

Mr. BALDWIN. The reason why I asked this question is this: There has been some point made in the hearings that you have some tank carriers that have clearances slightly in excess of 14 feet. Obviously, in time of war, when we have our troops in various countries like South Korea, and West Germany, and all of the rest of them, if these

are going to be effective the Defense Department also has to consider the clearances that you have in other countries. It seems to me before we consider the cost of going to some very high height in this country, that perhaps this committee should give some consideration as to whether or not, even if you get tank carriers of that type, whether you would be absolutely crippled in moving them in any other area where you might have to go in connection with offensive or defensive war.

Mr. CHACEY. I might comment on that briefly in this manner: As an objective, our general purpose vehicles are 11 feet in height, except for combat vehicles and some construction equipment, and such as that. We make a special effort to keep our equipment down to this 11 feet in vertical clearance. Of course the countries of Europe and other areas of the world are not building any extensive freeway system such as we have, so we have the same capability there of bypassing and going around.

I believe as I indicated yesterday, the primary consideration in overpass problems and clearance problems in overseas areas is the fact that it takes us longer to get there. It is not that we cannot get there. We can get into most of these areas with this type of equipment.

I think there is another extremely important point in considering this problem. That is, when we get into missiles, the missiles we are moving overseas with a field army can be transported easily over the foreign highways and over our highways. Our problem is being introduced through the development of intercontinental ballistic missiles and supporting equipment, and space vehicles. It is in that area that we are concerned primarily with the criticalness of our vertical clearances; as we are thinking of it today—it is not a problem in a theater of operations because it is a U.S. movement problem and not one for an Army area operation.

Mr. FALLON. Will the gentleman yield?

Mr. BALDWIN. Yes.

Mr. FALLON. That is the result of a change in concept of the Defense Department. Whereas in the past, and probably since 1812, when we were building for our defense, from that time up to the last war we were preparing mostly for an offensive war rather than a defensive war.

Mr. CHACEY. That is correct, and that change of concept introduces this problem of movement of intercontinental ballistic missiles and mobile defense, dispersal, antimissile missiles, etc. And it is not only the missile. We speak of missiles continuously, but sometimes our supporting equipment and radar, and launching platforms, and that type of thing, present more difficulties than do the missiles themselves.

Mr. BLATNIK. May we complete this question that the counsel started on, of the domestic problem? Mr. May.

Mr. MAY. Before we proceed, could we make that draft letter that Mr. Chacey read, an exhibit? Exhibit 13.

Mr. BLATNIK. Without objection it is so ordered.

(Exhibit 13 follows:)

EXHIBIT 13

HON. BERTRAM D. TALLAMY,
Federal Highway Administrator,
Department of Commerce,
Washington, D.C.

DEAR MR. TALLAMY: At the time the geometric design standards for the National System of Interstate and Defense Highways were established, it appeared that the 14-foot vertical clearance standard would be adeqaute for the movement of items essential to national defense. However, since that time there has been a greater realization of the potentials and importance of space flight, guided missiles, and mobile defense and of the requirements for transportation of items associated with these new concepts. There has also been a greater realization of the restrictive effect a 14-foot vertical clearance will have on transportation when construction of the Interstate System is completed.

Although it is virtually impossible to predict future military requirements accurately, technology is advancing so rapidly that the space age is already demanding larger payloads and more powerful rocket motors, which will mean larger physical dimensions than our missiles have today. Future technical breakthrough could mean even larger sizes of military hardware. If highway structures are built to standards that meet only requirements for presently developed and standardized items, the movement of future items may be restricted and potential national defense efforts may be seriously affected.

At the present time there are items requiring clearance higher than the approved standard. In the past, it has been possible to move oversize items by finding alternate routes which would go around obstructions. As the routes of the Interstate System are constructed and additional freeways, expressways, and other primary routes are developed, it will become more difficult and eventually impossible to move vehicles and loads exceeding 13½ feet in height any appreciable distance.

In view of the projected life of the Interstate System and the seriousness of the limitations placed on the system by the vertical clearance at structures, it is believed that a modification in the vertical clearance standard should be made. For a relatively small investment the usefulness of our principal highway network may be increased greatly.

This problem has been reviewed extensively by the officials in the Department of Defense concerned with these matters. It is the considered opinion of these officials that the National System of Interstate and Defense Highways should be built with a minimum vertical clearance of 17 feet. However, at urban areas, where alternate or circumferential routes with a minimum vertical restriction of 17 feet are available around the built-up areas, the present vertical clearance standard will be adequate for the foreseen needs of national defense.

It is realized that many rural structures have already been completed based on the 14-foot vertical clearance standard and that many others are designed or under construction. It is not expected that these structures should be modified at this time. Also, in view of the satisfactory operation of the procedures agreed to by the States and the Department of Defense with respect to the movement of oversize and overweight vehicles, it is not intended that the recommended modification of the geometric design standards for the National System of Interstate and Defense Highways should imply need for a change in State laws with respect to height limitations imposed on vehicles.

It is hoped that you will be able to effect the necessary coordination to revise the geometric design standards for the National System of Interstate and Defense Highways to provide a minimum 17-foot clearance for the rural and circumferential Interstate System routes and for those routes of the system passing through urban areas for which there are no alternate routes built to comparable structural standards.

Sincerely,

———— ————.

Mr. MAY. Mr. Chacey, when was that draft letter presented to the Bureau of Public Roads?

Mr. CHACEY. I believe, in some of the information that was made available to you, it was indicated on the 23d. However, actually this was discussed with them on the 23d, but the copy was made available to them on the 29th.

Mr. MAY. Who received it on behalf of the Bureau?

Mr. CHACEY. Mr. Siegle.

Mr. MAY. What discussion took place at that time between you and Mr. Siegle? Did you plan any action?

Mr. CHACEY. We discussed the ramifications of the problem and generally agreed it would be desirable to have General Besson and Mr. Tallamy meet with us and discuss this overall problem to insure we were following the thinking of our superiors.

Mr. MAY. Mr. Chairman, could we call Mr. Siegle and Mr. Erickson? Would you remain, Mr. Chacey?

Mr. Erickson, Chief, Bridge Division, Office of Engineering, Bureau of Public Roads, and Mr. Siegle, Chief, Division of Defense Plans and Operations, Bureau of Public Roads.

STATEMENTS OF ERIC L. ERICKSON, CHIEF, BRIDGE DIVISION, OFFICE OF ENGINEERING; AND ARTHUR G. SIEGLE, CHIEF, DIVISION OF DEFENSE PLANS AND OPERATIONS, BUREAU OF PUBLIC ROADS

Mr. MAY. Mr. Erickson, we have already had testimony that certain bridge designs on the Interstate System were altered to accommodate the heavier equipment of the military.

Would you tell us what the estimated cost of that change might be at the time the system has been completed?

Mr. ERICKSON. You mean the estimated cost of increasing the loading used in the design of bridges for the Interstate System over the cost of our normal construction?

Mr. MAY. Yes, sir.

Mr. ERICKSON. That would be a very, very small figure. I might explain, I can't give you a definite answer on that because I do not know, but the only thing that we did for the Interstate System that we have not done yet on our other system is with regard to the design loading that we commonly used for our highway bridges. This is known as an H–20–S–16 loading and in analyzing numerous military vehicles and their effect on the highway bridge, we found a deficiency in our overall strength of bridges in a very limited span range. In our system of loading we load with axle loads or wheel loads and in a span range of from about 20 feet to 40 feet, there is only a limited or partial number of the axles of the vehicle that we use in our design that is effective on this range of spans.

Mr. MAY. Mr. Erickson, when we discussed the matter with you, you mentioned a figure of $200 million as being the approximate additional cost?

Mr. ERICKSON. I probably did give you a figure but I could not stand on it because it may be half of that or it may be a quarter of that for the reason that there are very few bridges built in that span range. That is particularly true of steel bridges which are affected the most.

Mr. MAY. When you made that change, Mr. Erickson, did that constitute a change in standards?

Mr. ERICKSON. Yes, sir; it did, and it was made applicable to the Interstate System on the basis that the Interstate System was being built as a defense highway. It would be used for carrying these very heavy military loads.

Mr. MAY. Is this same procedure followed in connection with that problem?

Mr. ERICKSON. Which problem?

Mr. MAY. We have heard testimony relating to handling vertical clearance standard problems. Would there be the same problems in existence in connection with this bolstering of the bridges?

Mr. ERICKSON. No; the problems are quite different.

The matter of vertical clearance is something that the Army vehicle builders can normally do something about.

Mr. MAY. I was thinking along the lines of procedure, Mr. Erickson, in effecting the change?

Mr. ERICKSON. No; there was no comparable study made by us.

Mr. MAY. Mr. Siegle, what are your duties?

Mr. SIEGLE. As stated, I am Chief of the Division of Defense Plans and Operations. My division is responsible for defense highway planning and programs, mobilization planning and programs, emergency relocation planning and civil defense activities, Bureau of Public Roads. The control and direction of all defense activities of public roads are concentrated in my division.

We do advise other Federal agencies on those highway and highway transportation problems involving defense considerations and applications and we obtain from such agencies information and advice as needed to determine the impact of defense considerations under changing international conditions upon the highway plans and programs of public roads. In this we have almost daily contact with Mr. Chacey's office on one item or another.

Mr. MAY. So you personally maintain liaison with Mr. Chacey?

Mr. SIEGLE. I maintain liaison with him and other members of my division have regular contacts with members of his staff.

Mr. MAY. Mr. Siegle, you were aware that on October 1, 1957, Chief of Transportation's Office advised the Bureau of Public Roads that the 14-foot vertical clearance would be adequate.

Mr. SIEGLE. Yes, sir.

Mr. MAY. Did you speak with Mr. Chacey at the AASHO convention in Chicago which took place in December of 1957 about the problem of vertical clearances?

Mr. SIEGLE. Yes, sir, we discussed this.

Mr. MAY. What was said at that time?

Mr. SIEGLE. We discussed the effect of the changes brought about by the sputnik launching that was foremost in everybody's mind at that time and it appeared, the thinking was then current, that it would be wise to review this matter.

Mr. MAY. Was there some feeling that 14 feet would be inadequate?

Mr. SIEGLE. This was questionable at this time.

Mr. MAY. What was the next step made by the Chief of Transportation's Office in connection with this problem?

Mr. SIEGLE. In March of 1958 they asked us to make general estimates of the increase that would come about from raising the standards of 16 feet and to 18 feet.

Mr. MAY. Mr. Erickson has already testified in relation to that particular estimate, drawn up in a day or two and was simply an indication of the areas of cost. Mr. Erickson, when you drew up that estimate, did you consider all the structures which would be built on the Interstate System?

Mr. ERICKSON. In the case of the first estimate, that was intended to apply to all of the structures on the Interstate System.

Mr. MAY. That was limited to those structures that involved a vertical clearance?

Mr. ERICKSON. That is correct, we limited it to the structures that would affect the overhead clearance so that it would not interfere with the passage of a vehicle.

Mr. MAY. Would you explain to the subcommittee what you consider a structure?

Mr. ERICKSON. In our work we consider a structure any bridge that crosses a highway or a stream so that in our evaluation of the numbers of structures we consider an interchange although such an interchange may contain numerous bridges, that that whole thing is a structure.

Mr. MAY. A structure can cross a stream, another highway, railroad, a gully, many of the structures would not involve a vertical clearance?

Mr. ERICKSON. That is right.

Mr. Siegle, what took place thereafter, what was the next step in resolving this problem?

Mr. SIEGLE. The next step was in June of 1958. I received notice from Mr. Chacey at that time that they were contemplating sending us a letter on this subject.

Mr. MAY. Mr. Chairman, may we present this to Mr. Siegle for identification? Is that a copy of a memo that you prepared at that time, Mr. Siegle?

Mr. SIEGLE. Yes, sir; on June 23, I informed my superior, Mr. Royster——

Mr. MAY (interposing). Would you read the memo?

Mr. SIEGLE (reading):

> I have previously discussed with you the review being made in the Department of Defense as to the adequacy of the 14-foot vertical clearance for the Interstate System in view of the anticipated requirement for transportation of missiles.
>
> On June 20, Mr. Chacey informed me that he anticipates an early letter will be prepared stating conclusions of the Department of Defense which will definitely involve a greater clearance. They will be specific and will be prepared to back up this requirement as a defense need.

Mr. MAY. Who is Mr. Royster?

Mr. SIEGLE. Mr. Royster is an assistant commissioner for operations of the Bureau of Public Roads. He is the man to whom I report.

Mr. MAY. What is the date of that memo?

Mr. SIEGLE. The date of the memorandum is June 23, 1958.

Mr. MAY. Mr. Chacey, you indicated at that time that there would be an early letter forthcoming. Why was that early letter delayed?

Mr. CHACEY. The only thing I can say is that it was a matter of reconciliation of Department of Defense position.

Mr. BLATNIK. May I ask what "reconciliation" means? Does that mean trying to make up their minds?

Mr. CHACEY. Coordination, getting agreement. I forget my dates here now.

Mr. MAY. You hadn't yet heard from the Deputy Chief of Staff for Operations?

Mr. CHACEY. Our first letter from the Deputy Chief of Staff for Operations hadn't as yet been received. I believe I indicated earlier, that we talked about these things. I saw this problem coming and I talked with the operations people on the telephone before they got the official communication out and was advising them of what I foresaw in this area and what I was thinking at that time.

Mr. MAY. Mr. Chairman, may we make this an exhibit?

Mr. BLATNIK. Without objection, it is so ordered.

(Exhibit 14 follows:)

EXHIBIT 14

BUREAU OF PUBLIC ROADS,
June 23, 1958.

To: Mr. Paul F. Royster.
From: Arthur G. Siegle.
Subject: Vertical clearance for Interstate Highway System.

I have previously discussed with you the review being made in the Department of Defense as to the adequacy of the 14-foot vertical clearance for the Interstate System, in view of the anticipated requirement for transportation of missiles.

On June 20, Mr. Chacey informed me that he anticipates an early letter will be prepared stating conclusions of the Department of Defense which will definitely involve a greater clearance. They will be specific and will be prepared to back up this requirement as a defense need.

Mr. MAY. Mr. Siegle, what is the next step in the progress of this problem?

Mr. SIEGLE. The next step was a request for an extension of the estimates of additional costs for increased clearances to include greater heights. This came in August of 1958.

Mr. MAY. August 27?

Mr. SIEGLE. On August 27, 1958, Mr. Erickson responded by furnishing me an estimate which in turn I furnished Mr. Chacey on August 28.

Mr. MAY. I have a copy of that memorandum, Mr. Siegle, and we discussed this previously with Mr. Chacey. You pointed out that his copy did not contain certain penciled notations that appear on this copy. I notice here it says "Under clearance to 16 feet, 4.1 percent, and total cost in millions is 94, $94 million for 16 feet."

That would represent the additional cost in going to 16 feet instead of building the structure at 14 feet. Is that true, Mr. Erickson?

Mr. ERICKSON. That is correct.

Mr. SIEGLE. I would like to comment on that figure. This was a figure derived mathematically at that time and was put on this memorandum at a later date and was based upon an incidental figure that we had included in the March 1958 memorandum of 0.257 of the cost of the Interstate System. Now a check was made in September, and as Mr. Chacey has already testified, this cost was found greater than that and in September it was corrected. This was simply a worksheet in which this was a derived figure that was not furnished as such.

The Department of Defense, in September of 1958, they understood what the right figure was for that.

Mr. MAY. Mr. Chairman, may we present this to Mr. Siegle for identification?

Is that a true copy of the memorandum, Mr. Siegle?

Mr. SIEGLE. This is a true copy of the memorandum I have in my own file with these penciled notations made on it at a date later than August 27.

Mr. MAY. Would you let Mr. Erickson see that? Your first estimate in March was a quick estimate drawn up in a day or two to indicate simply the possible area of costs. Was this a little more detailed estimate?

Mr. ERICKSON. Yes; considerably more work was done to arrive at these percentages of increased structure costs.

Mr. MAY. Did this estimate also include all structures throughout the system involving an overhead clearance?

Mr. ERICKSON. This estimate that I prepared at this particular time did not go into the total costs. We were still talking in terms of percentages that the Army might apply in their studies of this clearance problem.

Mr. MAY. You mentioned in that memo some 7,000 bridges; would you read that notation, Mr. Erickson?

Mr. ERICKSON. This is a notation at the bottom of this letter and it reads as follows:

Does not include 7,000 bridges over 1,000 feet and 42 tunnels over 500 feet.

Mr. MAY. Do you have comment, Mr. Siegle?

Mr. SIEGLE. I would like to add, preceding that note Mr. Erickson read, there is an asterisk which applies to one figure only, also placed in pencil on this same memorandum. That figure is 1.57 percent and is the figure that came out in a later estimate that we will come to, I think, in a few moments, but I just wanted to indicate that this note which was taken as well as the figure which applies, was simply a copy from a later memorandum.

Mr. MAY. Will you present this to Mr. Siegle?

Mr. BLATNIK. This will be exhibit 15 for the record. Without objection, it is so ordered.

(Exhibit 15 follows:)

EXHIBIT 15

U.S. GOVERNMENT,
BUREAU OF PUBLIC ROADS,
August 27, 1958.

Office memorandum.

To: Mr. A. G. Siegle, Chief, Division of Defense Plants and Operations, Office of Operations.

From: E. L. Erickson, Chief, Bridge Division, Office of Engineering.

Subject: Interstate System vertical bridge clearance.

Reference is made to your memorandum of March 14 relative to the increased cost for grade separation structures, including approaches for underclearances in excess of 14 feet. We have previously computed the increased cost for 16-foot and 18-foot underclearances. Our estimate has now been extended to include the additional cost of increasing the underclearances by 2-foot increments up to and including 24 feet.

The results may be tabulated as follows:

	Percent increase	Total increase (millions) [1]	Percent increase in cost entire Interstate System
Underclearances:			
14 feet to 0	4.1	[2]	0.25
16 feet to 4.1			
18 feet to 9.0	4.9	214	.57
20 feet to 15.2	6.2	591	[3] 1.57
22 feet to 21.0	6.8		
24 feet to 24.5	3.5		

[1] Based on total cost of 37.57 billions.
[2] Does not include 7,000 bridges over 1,000 feet and 42 tunnels over 500 feet.
[3] 94 percent of the cost of a separation structure with a 14-foot underclearance

Mr. MAY. Was another estimate drawn up in September, Mr. Siegle?

Mr. SIEGLE. In September, Mr. Chacey asked us to furnish information to complete a memorandum, a rough draft of which he gave me dated September 17, 1958, which called for insertion of the figures as to the costs for 20-foot vertical clearance and upon receipt of that, I asked Mr. Erickson to estimate the dollar figure that would go with an increase in costs and this was the first real estimate he made of that type. This he furnished me on September 29, 1958.

Mr. MAY. What was the dollar figure at that time?

Mr. SIEGLE. He furnished a figure of $591 million for increasing the underclearance from 14 feet to 20 feet. And in this same memorandum I might point out is this 1.57 percent figure and also the notation that was read by Mr. Erickson a moment ago.

Mr. BALDWIN. If I might ask a question, are these the estimates for the structures still to be built on the system? Are these estimates for the structures to be built in the future as compared with an estimate as to any change in structures that have already been built on new insterstate highways?

Mr. ERICKSON. This estimate did not take into consideration the remodeling of any existing work. It was purely based on new work.

Mr. BALDWIN. Secondly, you mentioned in your first estimate that it excluded bridges over 1,000 feet.

Mr. ERICKSON. That is correct.

Mr. BALDWIN. Could I ask just out of curiosity the reason for that exclusion?

Mr. ERICKSON. Because we had no information available on short notice to base an estimate on.

Mr. BALDWIN. So in effect it was only an estimate that applied to a portion of the structures.

Mr. ERICKSON. That is, it applied to the work that was to be built.

Mr. MUMMA. Mr. Baldwin, will you yield a minute?

Mr. BALDWIN. Yes.

Mr. MUMMA. The average bridge over 1,000 feet, there would be no vertical clearance involved, would there?

Mr. ERICKSON. That is only partially correct. What I am talking about, when we get into bridges that are over 1,000 feet long, there will be numerous of those bridges that will be of the through structure type and will be involved with bracing.

Mr. MUMMA. Bracing?

Mr. ERICKSON. Overhead bracing.

Mr. MUMMA. I can't understand that. If it would be a removable section like a drawbridge, I would see how you would get that. Do you know of any that has that?

Mr. ERICKSON. Oh, yes; we have lots of them like that.

Mr. MUMMA. Name me one, will you please?

Mr. ERICKSON. You have numerous bridges in the city of Philadelphia that have been built with overhead clearance.

Mr. MUMMA. You mean present design?

Mr. ERICKSON. No; they are already built.

Mr. MUMMA. I mean these in the Interstate System, the way you start to build them, there are very few of these bridges 1,000 feet or more that have any vertical construction on them. Take the turnpike bridges at Harrisburg. There has been two or three bridges built over the river——

Mr. ERICKSON. They are all relatively short-span bridges.

Mr. MUMMA. Pretty nearly a mile long.

Mr. ERICKSON. Spans are relatively short. Now, at the present time, we are building several bridges over the Ohio River and these will all have overhead vertical clearance.

Mr. MUMMA. Well, they are suspension bridges.

Mr. ERICKSON. No; truss bridges.

Mr. FALLON. Will the gentleman yield? Just on that point, do you have knowledge of the vertical height on the spans on the Pennsylvania Turnpike?

Mr. ERICKSON. On the Pennsylvania Turnpike, I don't have anything definite here, but it is my recollection that the clearance that they were built to was 14 feet.

Mr. FALLON. How about the New Jersey Turnpike?

Mr. ERICKSON. New Jersey Turnpike is 14 feet plus some little allowance for resurfacing.

Mr. FALLON. The new New York Turnpike?

Mr. ERICKSON. The New York Turnpike is also in that same category.

Mr. FALLON. What is that?

Mr. ERICKSON. Fourteen feet plus some allowance for resurfacing. I think that is the standard clearance in New York.

Mr. FALLON. How about Ohio Turnpike?

Mr. ERICKSON. Ohio Turnpike I don't know.

Mr. BLATNIK. Mr. May?

Mr. MAY. Mr. Chairman, may we make this September 29 memo which has been identified by Mr. Siegle as exhibit 16?

Mr. BLATNIK. Without objection, so ordered.

(Exhibit 16 follows:)

EXHIBIT 16

U.S. GOVERNMENT,
BUREAU OF PUBLIC ROADS,
September 29, 1958.

Office memorandum.
To: Mr. A. G. Siegle, Chief, Defense Plans and Operations Division.
From: E. L. Erickson, Chief, Bridge Division, Office of Engineering.
Subject: Interstate System, vertical bridge clearances.

In accordance with your request, we have made an estimate of the additional cost for increasing the underclearance of all structures over the interstate roads from 14 feet to 20 feet.

Because of the incomplete information available (figures used obtained from Mr. Foster), the result is, of course, very approximate. Based on a previously estimated percentage increase of 15.3 for an increase in underclearance from 14 feet to 20 feet, we have arrived at a total figure of $591 million.

Based on a total cost of the Interstate System of $37.57 billions, the cost increase represents 1.57 percent of the total estimated cost of the system.

We have estimated that approximately 24,000 separation structures would be involved, made up of road crossings, railway crossings, and interchange structures. It should be brought out, however, that the 1.57 percent does not include approximately 7,000 bridges of which 476 are over 1,000 feet in length and 42 tunnels over 500 feet long, of which we have no means of estimating the added cost for increased underclearances.

Considering the fact that many large and costly bridges, tunnels, and interchanges have already been built or are under construction to a vertical clearance of 14 or 15 feet, it appears that it is almost impossible from an economic standpoint to increase vertical clearances to 20 feet on all routes at this late date. It may, however, be possible to provide the 20-foot clearance on certain selected routes if such clearance is essential to military operations.

Mr. ERICKSON. Mr. May, there is one comment I would like to make with regard to this September 27 memorandum. We say here:

It should be brought out, however, that the 1.57 percent does not include approximately 7,000 bridges over 1,000 feet in length and 42 tunnels over 500 feet long of which we have no means of estimating the added cost for increased underclearances.

Now our later information has developed that there is a somewhat lesser number of total bridges involved than indicated here. But that was the best figure that we had and was put in here to indicate that the estimate did not include these stream-crossing bridges and these tunnels.

Then we further brought out in this memorandum—

Considering the fact that many large and costly bridges, tunnels and interchanges have already been built or are under construction to a vertical clearance of 14 or 15 feet, it appears that it is almost impossible from an economic standpoint to increase vertical clearances to 20 feet on all routes at this late date. It may, however, be possible to provide the 20-foot clearance on certain selected routes if such clearance is essential to military operations.

Mr. MAY. What was that late date?

Mr. ERICKSON. That was on September 29, 1958.

Mr. ROBISON. Mr. Chairman?

Mr. BLATNIK. Mr. Robison.

Mr. ROBISON. Let the record show that some of the highways that you have just mentioned, such as the Pennsylvania Turnpike and New York State Thruway and so on, were built prior to the so-called start of the 1956 act.

Mr. ERICKSON. That is correct.

Mr. SCHERER. I was talking to Mr. Fallon a few minutes ago and I don't know whether this is in the record or not. How many structures have been built on the Interstate System which involve vertical clearance since the adoption of the 1956 act?

Mr. ERICKSON. Well, I think we can give you that figure.

Mr. SCHERER. That is important.

Mr. ERICKSON. Mr. Scherer, according to the latest information that we have compiled in the Bureau that were a total of 2,117 bridges built to clearances of 16 feet or less.

Mr. SCHERER. Sixteen or fourteen feet?

Mr. ERICKSON. Now 15½ feet, we have 1,318; at 14½ feet, 502; and 14 feet, 331.

Mr. SCHERER. That have been built on the Interstate System since——

Mr. ERICKSON. Those have been built on the Interstate System between July 1, 1956, and October 12, 1959.

Mr. SCHERER. You mean they involve vertical clearances—read that again. The bells were ringing and it was difficult for me to follow.

Mr. ERICKSON. These bridges all involve clearances of 16 feet or less. That is the 2,177. Of that 2,177, 331 have been built to a clearance of 14 feet; 502 with clearance of 14½ feet; 1,318 with clearance of 15 feet; 26 to 15½ feet.

Mr. MAY. Would you read that last figure again, Mr. Erickson?

Mr. ERICKSON. Twenty-six to 15½ feet.

Mr. BLATNIK. Mr. Erickson, how many existing overpasses were incorporated in this system?

Mr. ERICKSON. We estimate at the present time that there are approximately 6,000, a little over 6,000 structures. That will include not only overpasses but other structures that have clearance restrictions.

Mr. SCHERER. Do you have the total number there that do not meet the 16-foot requirement under the latest order? What is the total? Have you totaled those?

Mr. ERICKSON. No.

Mr. SCHERER. You just issued an order a couple of weeks ago that there shall be 16 feet in the future. I don't know how many have been built since the 1956 act.

Mr. ERICKSON. Since the 1956 act?

Mr. SCHERER. Since we adopted the standard which required a 14-foot clearance.

Mr. ERICKSON. I am not sure, 2,177 up to October 12, and 82 from October 12 to January 22. That would be 2,177 plus 82, that is 2,259.

Mr. SCHERER. Am I correct, 2,259 structures since we adopted the vertical standards as a result of the 1956 act which clearances vary anywhere from a minimum of 14 feet to 16?

Mr. ERICKSON. To just less than 16.

Mr. WRIGHT. Did I understand correctly, sir, that the 2,259 are in addition to some 6,000 which you say have been incorporated——

Mr. ERICKSON. Which have been incorporated into the system prior.

Mr. WRIGHT. So the total number of overpasses and structures presently in the system, so designated, with inadequate clearances by

your present standards would total something like 8,259. Is that right?

Mr. ERICKSON. About 8,000.

Mr. SCHERER. We can't charge anybody at all with any negligence on those.

Mr. BLATNIK. No charges are being made—we are just trying to find out.

Mr. WRIGHT. What the problem is in total.

Mr. ERICKSON. That is the only thing that points up the problem.

Mr. SCHERER. One of the papers here that I read, I have it some place in my file, I read it, it indicated we built 8,000, 9,000 bridges since the adoption of the standards and it was misleading to us.

Mr. BALDWIN. Will the gentleman yield?

Mr. SCHERER. Yes, sir.

Mr. BALDWIN. As I understand, of the 6,000 structures, a lot of those will be replaced since the Interstate System has taken over and has been designed up to this standard of 4 lanes with controlled access and divided centerline, so those 6,000, many of them are going to be replaced in the course of construction of the Interstate System to new standards.

Mr. ERICKSON. That could be in some instances, but for the most part, these structures substantially conform to the present standards.

Mr. WRIGHT. Might I inquire?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Might I inquire of the expert who knows best the costs, by your formula, and approximately what would have been the additional cost required to have constructed these 8,000 at the minimum 16-foot standard initially?

Mr. ERICKSON. Say we have approximately 8,000 bridges and the typical bridge would cost $140,000, according to my quick arithmetic here, it is about $112 million.

Wait a minute, $1,120 million.

Mr. MUMMA. You ought to have your slip stick.

Mr. ERICKSON. $1,120 million.

Mr. WRIGHT. Let me be sure I identify what this figure is. This figure would represent the cost to have constructed these overpasses and bridges at the 16-foot standard, right?

Mr. ERICKSON. The figure I have given you is the cost of that initial construction.

Mr. WRIGHT. Of the construction.

Mr. ERICKSON. Now, to get to the additional cost——

Mr. WRIGHT. To raise it 2 feet higher?

Mr. ERICKSON. To raise this thing to 16 feet you would apply a factor of about 5 percent.

Mr. WRIGHT. You would apply a factor of about 5 percent, assuming it initially had been built at 16 foot standards?

Mr. ERICKSON. Right.

Mr. WRIGHT. Let me ask approximately what it would cost were it deemed necessary to go in and reconstruct those overpasses?

Mr. ERICKSON. The factor I have been using for that is 55 percent.

Mr. WRIGHT. 55 percent more?

Mr. ERICKSON. 55 percent of the initial construction cost.

Mr. WRIGHT. Therefore, to reconstruct 8,000, were this deemed necessary, would probably cost us somewhere in the neighborhood of $600 million?

Mr. ERICKSON. $600 million.

Mr. WRIGHT. Whereas to have constructed them at 16-foot standard initially would have cost $60 million.

Mr. ERICKSON. That is right.

Mr. SCHERER. Before we go to something else, I said I had this clipping from one of the newspapers in my file and I just found it. From the testimony just given, it indicates this is clearly wrong then.

The heading reads:

NEW BRIDGES TOO LOW, IT IS RULED 2½ YEARS LATER

The House investigator said yes, about 90 percent of the 9,000 bridges constructed under the Interstate Highway Act fall short of Defense Department specifications.

That is not so, is it, Mr. Siegle?

Mr. SIEGLE. No.

Mr. BLATNIK. Department of Defense was considering 17 and 18 foot clearance.

Mr. ERICKSON. It all depends on what clearance you are talking about.

Mr. SCHERER. I understood the only official word that we have ever heard from the Defense Department, the final one was 16 feet, that would take care of Defense Department needs. Is that right?

Mr. ERICKSON. That has been their official position.

Mr. SCHERER. That came through a week ago.

Mr. BLATNIK. Mr. Erickson, I am still not clear on these cost figures. I understand these are not total costs, these are the additional costs.

Mr. ERICKSON. That is correct.

Mr. BLATNIK. Some of these 8,000 structures are previously existing and subsequently incorporated, thus there were 2,000 some newly built overpasses, and if all of these had been built up to 16 feet initially, this is somewhat hypothetical, am I correct in saying that the added cost is the cost above what it would have been to build 14-foot clearance, and to go to 16, the added cost would be about $56 million?

Mr. ERICKSON. The added cost would have been 5 percent, whatever that figures out.

Mr. BLATNIK. About $56 million, is that correct?

Mr. ERICKSON. If that arithmetic is correct, yes.

Mr. SIEGLE. The arithmetic applying 5.2 percent, is $1,112 million, I think, and would produce about $53 million.

Mr. BLATNIK. I am trying to do it in my head.

Mr. SIEGLE. Let's change that to $558 million.

Mr. ERICKSON. $560 is the figure you come up with.

Mr. SIEGLE. This is 5-percent figure.

Mr. BLATNIK. 5 percent of what figure? Let's start from the beginning.

Mr. ERICKSON. It would be $56 million.

Mr. SCHERER. That is, if we had started to build them to the 16-foot height as of 1930.

Mr. ERICKSON. Way back in 1930-something. That is when some of these bridges were built. The Pennsylvania Turnpike bridges are included in that figure.

Mr. MAY. Mr. Erickson, so we will be clear on this now, since the act came into being in July of 1956, there have been built 2,259 structures at a clearance of less than 16 feet. Is that correct?

Mr. ERICKSON. 2,259 structures, according to our latest information.

Mr. MAY. Now, if those structures amount to a cost of $1,120 million, using your figure of $140,000 per structure——

Mr. ERICKSON. On that premise, we will go ahead.

Mr. SIEGLE. Wait a minute. Do I understand you to say the cost of the 2,259 was a billion?

Mr. ERICKSON. Yes, sir.

Mr. SIEGLE. That is incorrect. That is the cost of the 8,000 that Mr. Erickson gave you.

Mr. BALDWIN. If I understand you correctly, when you are giving us the cost of the 8,000, then you are giving us the cost of structures that were built all the way back as far as 1930, and were in roads subsequently brought on the Interstate System; is that right?

Mr. ERICKSON. That is right.

Mr. BALDWIN. So you are talking about construction costs in some cases as of 1930 costs.

Mr. ERICKSON. That is right.

Mr. BALDWIN. So when we say they could have been built with 16-foot standard and that is going to cost $56 million, we are applying it to construction costs as of 1930 for those bridges.

Mr. ERICKSON. Yes, sir. Well, that is not quite correct.

Mr. SCHERER. Why do we have to go back to 1930? We are trying to prove what the loss is since the establishment of the 1956 act.

Mr. ERICKSON. The only reason for bringing those bridges into the picture at all is to give some indication of the amount of money that might be needed to bring all of these structures up to a 16-foot standard.

Mr. BALDWIN. What I am driving at, $56 million is so completely hypothetical when we say a bridge built back in 1930, if built to 16 feet, would have cost 5 percent more, we can't go back to the construction costs of 1930 and I just do not see why we are going into all these completely hypothetical figures.

Mr. SCHERER. Actually, what some people are trying to prove here is, what did any negligence, if any did exist, cost us by not building these bridges 16 feet as of the effective date of this Highway Act of 1956? That is what we are trying to develop.

Mr. ERICKSON. Then you have to confine yourself to this other figure.

Mr. SCHERER. 2,200?

Mr. ERICKSON. 2,177 or 2,200.

Mr. BALDWIN. I would like to ask if any of the witnesses would contend anybody in the Defense Department or Bureau of Public Roads knew in 1930 we were going to be building missiles which would require 16-foot clearance.

Mr. MAY. Mr. Erickson, let's stay with the figure of 2,259 structures which have been built since the inception of the program in 1956.

Using your figure of average cost of $140,000 per structure, we come up with a total figure of $316,260,000.

Mr. ERICKSON. Total construction cost.

Mr. MAY. For 2,259 bridges.

Mr. ERICKSON. That is right.

Mr. MAY. If it became necessary to go back and revamp structures to 16 feet, the new vertical clearance standard, it would cost an additional 55 percent of the original cost.

Mr. ERICKSON. That is the basis we used.

Mr. MAY. That comes to $173,943,000.

Mr. SCHERER. Mr. Counsel, I don't consider that as a fair figure. Nobody could have seen in 1956, when we adopted these standards, that we were going to have to raise it some time after sputnik. If you really want a true figure of any negligence which might have existed it starts from the date we began to understand we had a sputnik and the need to increase this from 14 to 16 feet. That would be the fair way to arrive at any losses that we sustained.

Mr. SIEGLE. If you wish to confine yourself to 2,259 structures rather than 8,000 which you asked Mr. Erickson about, then we can give you cost figures of what they did cost rather than an assumed cost which he has had to use for the larger number.

Mr. MAY. Do you have those available, Mr. Siegle?

Mr. SIEGLE. Yes, sir.

Mr. MAY. What would actual costs be?

Mr. SIEGLE. The actual cost of those 2,259 structures is $374 million.

Mr. SCHERER. You say authorized structures—have they all been built?

Mr. SIEGLE. No, sir; these are the one underway. Some of which are completed but have all been authorized since 1956. Many of them can be adjusted. Some of them can be adjusted.

Mr. SCHERER. Some can be adjusted?

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. And some have not actually been started yet?

Mr. SIEGLE. That is correct.

Mr. SCHERER. And then to get a true figure, am I not correct we ought to start say in a few months after sputnik, which was the first time that anybody could be charged with knowing that these things ought to be higher, this clearance ought to be higher than 14 feet.

You have no figures then on how many bridges were built or authorized since that date, do you?

Mr. SIEGLE. We could furnish that, sir.

Mr. ERICKSON. What was the date of sputnik?

Mr. SCHERER. October 1957.

Mr. BLATNIK. October 2, 1957.

Mr. SCHERER. On October 1, we all agreed that everybody said 14 feet was sufficient.

Mr. MAY. Did we agree to that, Mr. Chacey?

Mr. CHACEY. Sir?

Mr. MAY. Did we agree nobody should have known about these structures prior to October 1957? Didn't we go through a list of equipment yesterday all of which exceeded the 14-foot vertical clearance standards?

Mr. SCHERER. I think that has been explained. A few pieces of oversize equipment they moved around the low clearances. No piece of oversize equipment has been refused as of today. That is the testimony.

Mr. EDMONDSON. Mr. Chairman, could I ask a question on this point? I would like to ask Mr. Chacey to answer for me whether the 155-millimeter gun, the 8-inch howitzer, the 155-millimeter gun M–40, 155-millimeter gun M–53, 155-millimeter howitzer M–52, and the 8-inch howitzer M–55, are important components of our artillery forces today? Can you tell us whether they are?

Mr. CHACEY. I can't answer that question completely. I do believe you mentioned one item of equipment that while I don't want to go into detail on it, is not considered a principal weapon. Some of these others, I am not informed on the priority of importance of these items of equipment.

Mr. EDMONDSON. You are not able to tell whether it is important that these particular weapons be maneuverable across the country today or not?

Mr. CHACEY. If these are the current standard weapons, it is important that we be able to move them effectively.

Mr. EDMONDSON. Does one of your assistants here know whether these are correct standard weapons that need to be moved across the country?

Mr. CHACEY. No, sir. If you will give us the list, why we will be glad to check them against standard items of equipment.

Mr. MAY. Mr. Chacey, that list that we inserted in the record yesterday is not an all-inclusive list. The military had many other oversized items.

Mr. CHACEY. Principally in the construction equipment area.

Mr. MAY. Is that true, Mr. Chacey, didn't you have other items?

Mr. CHACEY. Principally in the construction equipment area.

Mr. MAY. Eliminating those, do you have other items besides what are shown on the list there in 1957, all of which have exceeded 14 feet on a transport?

Mr. CHACEY. This is identified as a partial list of military equipment that requires in excess of 13 feet 6 inches for highway transportation. Now I don't know how many more items there are.

Mr. MAY. Mr. Chacey, are you not charged with knowing what is in the inventory, you, holding your position as Chief of Transportation Office?

Mr. CHACEY. As of a very recent date, we have been charged with certain inventory responsibilities. However, that has not been implemented by regulation and I think we do have a pretty complete list in our office. It isn't on this piece of paper and I can't remember all of those details.

Mr. MAY. Do you agree, Mr. Chacey, that the situation in 1956 should have been handled by the military a little bit more properly in regards to the transportation of these items which exceeded 14 feet? Would you explain as you did to me the thinking of the people of the military at that time?

Mr. CHACEY. Well, the thinking of the people in the military in 1956, I feel, and others may not agree with me, was in terms of theater of operations as far as our military operations were concerned.

Our primary items of equipment in large part come within a size and weight limitation which can be moved in theaters of operations.

As I explained yesterday, there are two categories: One is our general purpose vehicle, and the other is special combat equipment; and the determination as to how much time we will sacrifice in transportation of those items to get certain of the operational characteristics that they feel they need for military operation is a decision that is made at a higher level. We advise on the difficulties of transportation and the problems involved from a time and capability standpoint and if at a higher level it is determined they can sacrifice "X" number of days for this transportation potentiality in the interest of more effective weapons, I am thinking particularly of our armored equipment, that is the determination at a higher level.

Mr. MAY. They determine that they would make the sacrifice. You build a $40 billion defense system they would sacrifice and use secondary and primary roads for the movement of this equipment?

Mr. CHACEY. Well, primary emphasis was at that time, and it is specifically stated in our regulations, primarily we will depend on railway transportation for some of these exceptionally oversize and overweight items.

Mr. MAY. During an emergency?

Mr. CHACEY. It is clear that at that time it was felt that items of this dimension that had to be moved would be moved by rail or we would find the alternate route of bypassing occasional obstructions.

Mr. MAY. So it was their thinking that, despite the defense system, they would use other roads, because it was obvious to move equipment which on its transporter would be more than 14 feet, those pieces of equipment would not be transported on the Interstate System in those areas where a 14-foot structure had been built.

Mr. CHACEY. Well, it was their determination that they could sacrifice the efficiency of this particular move in the interests of keeping as low a standard and as economical a system as possible.

Mr. BALDWIN. Mr. Chairman, I think the record should be clear, that statement of the counsel was that these could not be transported over a system with 14 feet, but the testimony that you made yesterday was that some of these vehicles, for example, tank carrier, all you had to do was run the tank down off the carrier and run it through the underpass and put it on the other side and go on, because taking it off left a clearance of about 11.5 feet instead of 14-some feet; isn't that correct?

Mr. CHACEY. That is correct. That can be done and it has been done.

Mr. MAY. Would you explain to the Congressman how you would do that in an emergency, Mr. Chacey?

Mr. CHACEY. Of course, one of the things that worried some of us was that, in an emergency, you would lose a lot of time in that procedure or you would have to use alternate routes.

Thousands of structures that will be built over a period of 15 or 20 years will present more serious problems than we had experienced.

Mr. SCHERER. You maybe had in mind there were some Congressmen would not even vote enough to pay for 14-foot clearance.

Mr. CHACEY. We were very mindful of the complications and problems that had developed with respect to funding the Interstate System; yes, sir.

Mr. FALLON. Mr. Chacey, isn't it true that you have to plan these alternate routes because the system is not built? We don't have a completed Interstate System so it is necessary for you to plan all routes until this system is built. You can't use it?

Mr. CHACEY. That is an extremely important point.

Mr. FALLON. Now, what you are recommending is that in the future, on the Interstate System or any other routes that might be of military nature, clearances be raised to 16 feet.

Mr. CHACEY. That is correct, sir.

Mr. BALDWIN. Will the gentleman yield?

Mr. FALLON. Yes.

Mr. BALDWIN. Even further than that, the type of equipment that was listed on this list, there are all kinds of equipment primarily used in theaters of operations. We never use them actually for operation in this country, these types of guns, I understand. You know very well when you get over to theaters of operations you are going to have them on roads with more inadequate clearance than you have here.

Mr. CHACEY. Generally, that is correct.

Mr. EDMONDSON. Will the gentleman yield?

Mr. FALLON. Yes.

Mr. EDMONDSON. The question which was just directed about your now requiring 16 feet, not only on the interstate defense system, but on alternate routes, was I believe answered in the affirmative. Is that correct? Is your recommendation extended to any routes other than the interstate?

Mr. CHACEY. The official recommendation was limited to the Interstate System.

Mr. EDMONDSON. Do you have the feeling that there should be a raising of clearance requirements on any roads other than the defense system, the interstate defense system?

Mr. CHACEY. I have in mind that perhaps as an alternative to increasing or going back and rebuilding or raising any existing 14-foot structure on the Interstate system, that an alternate route on a primary system might be used and thereby be a much more economical procedure for the occasional outsize movement.

Mr. EDMONDSON. Has that been recommended?

Mr. CHACEY. Not officially.

Mr. BLATNIK. Mr. Wright?

Mr. WRIGHT. The question was approached a moment ago as to when we first became aware of the probable inadequacy of the 14-foot minimum standard. Doesn't the record of the hearing reveal that as early as January 15, 1957, over 3 years ago, and only 6 months after the initial adoption of these standards, Maj. Gen. Paul F. Yount wrote a letter distributed to the Chief of the Bureau of Yards and Docks of the Navy, to Chief of Engineers for Department of Army, Director of Transportation of the Air Force and Chief of Ordnance of the Army in which he raised this question as to whether or not a 14-foot standard would be adequate and in which he stated the primary purpose of his request was to insure that minimum vertical clearance of 14 feet for bridges and underpasses which might restrict transporting of defense material such as missiles is brought to the attention of all concerned? Isn't that what General Yount wrote on January 15, 1957, over 3 years ago?

Mr. CHACEY. That is correct.

Mr. WRIGHT. And did he not suggest in that letter also and I quote from it in addition—

It would appear that if an increase in the vertical clearance of overpasses on the National System of Interstate and Defense Highways is required, the same standards should be applied to the 235,000 miles of Federal-aid primary system to insure flexibility in highway transport movements.

Mr. CHACEY. He made that statement. I want to emphasize that this is an internal Department of Defense paper.

This was not a recommendation to the Bureau of Public Roads and what we were seeking there was to aggravate thinking and consideration of the various potentialities and the various problems.

Mr. WRIGHT. But the problem was recognized at least that early.

Mr. CHACEY. Recognized as a potential problem. It was one point where General Yount had the responsibility for making the determination.

Mr. WRIGHT. He showed some vision then in pointing it up.

Mr. CHACEY. The question was in his mind as to whether or not this vertical clearance was proper at that time.

Mr. COOK. Would the gentleman yield?

Mr. SCHWENGEL. I would like to correct that to say over 2 years not 3.

Mr. WRIGHT. This is 1960. The letter was written in January of 1957.

Mr. SCHWENGEL. I thought you said December of 1957.

Mr. WRIGHT. If I said that, I stated it wrongly, because the letter was dated on January 15, 1957.

Mr. MAY. Mr. Chacey, comment has been made——

Mr. SCHERER. Before we move on, Mr. Counsel, something hasn't been cleared up.

You said that there were 2,250—or what was that figure?

Mr. ERICKSON. 2,259 bridges.

Mr. SCHERER. You say there were 2,259 bridges authorized since the adoption of the standards under the 1956 act.

You said you don't know how many of these have been completely built, how many are in the process of being built, and how many haven't been started.

Mr. ERICKSON. That is right. All we know is that many structures have been authorized to go out for bids.

Mr. SCHERER. Now, is there any way of finding out from AASHO or the State highway departments how many of that 2,259 have been completely built, how many have been partially built, and how many have not even been started?

That is important. Then we are going to get some place and find out what loss there is by dereliction.

Mr. ERICKSON. No survey of that has been made by us.

Mr. SCHERER. I understand. Can that be obtained, because to me, that is the crux of the thing we are trying to determine.

Mr. ERICKSON. I don't know whether it can be made accurately in any reasonable length of time.

Mr. SCHERER. I think people from AASHO could get us that in a couple of days. It is a pretty good organization at times. May I ask that you make an effort to get this information for the record?

Mr. ERICKSON. Yes, sir; we can make an effort to get that.

Mr. BALDWIN. Will the gentleman yield?

Mr. SCHERER. Yes, sir.

Mr. BALDWIN. I would like to ask a further point. When you mentioned 2,259 had been authorized and that the Bureau has now changed its requirements to 16 feet as of a couple of weeks ago, is the Bureau making any effort to go back on those that have been authorized and not yet been put out to bid, actually put out to bid, so those are corrected to the new design standards?

Mr. ERICKSON. An effort along those lines is being made. In our memorandum instructing the field to proceed on the basis of 16 feet, there was a provision to the effect that wherever economically possible, the plans should be revised and the work built to the new standard. This memorandum is dated January 27.

Mr. SCHERER. The day after, the vertical clearance order came through.

Mr. ERICKSON. That is true.

Mr. SIEGLE. The same date we got it. That memorandum went out under Mr. Tallamy's signature and it contains this provision:

> Projects now under design should be revised to conform to this instruction unless they can be included by virtue of a routing arrangement described in the second paragraph of this memorandum or will result in excessive cost or delay. Projects already under construction should likewise be modified to this revised standard.

That is the 16 feet.

> Provided this can be done without excessive increasing costs or delay to the project and the revision can be accomplished without the necessity for negotiating a supplemental agreement with the contractor for new unit prices or new items of work.

Mr. BALDWIN. Then it is reasonable to state that in effect we are not going to build 2,259 structures to the old 14 feet standards, that a portion of these being caught in time are actually going to be built to the new standards.

Mr. ERICKSON. That is correct and that will particularly apply to those projects which have been put under contract since last fall and, in our recent survey, that indicates that there may be a substantial portion of the 82 jobs that were put under way since October 12 will be taken care of by changes in plan.

Mr. BALDWIN. Thank you.

Mr. SCHERER. Mr. Chacey, as a result of these hearings, do you think the Defense Department will again evaluate its findings and determine now whether we should have 17 feet instead of 16 feet?

Mr. CHACEY. Insofar as I am concerned——

Mr. SCHERER. Would you like to see that happen?

Mr. CHACEY. I will not initiate that action. That is more appropriately a question for someone who will follow me.

Mr. BLATNIK. Mr. May?

Mr. MAY. Mr. Siegle, Mr. Chacey has testified that he delivered General Besson's draft letter to Mr. Tallamy on January 29, 1959, and it was decided at that time that you would attempt to bring about an early meeting of General Besson and Mr. Tallamy to consider the problem.

That is true?

Mr. SIEGLE. Yes, sir.

Mr. MAY. A short time thereafter, February 6, 1959, Mr. Erickson prepared another estimate and this time he estimated an additional cost would be required to build future structures at 17 feet instead of 14 feet. Is that true?

Mr. SIEGLE. That is correct.

Mr. MAY. Will you present this to Mr. Siegle?

Is that a true copy of the memorandum, Mr. Erickson wrote?

Mr. ERICKSON. Yes, sir.

Mr. MAY. Mr. Erickson, now for the first time, you eliminated certain structures.

Mr. ERICKSON. That is correct.

Mr. MAY. Would you explain that?

Mr. ERICKSON. At about the time this memorandum was prepared, I did discuss this matter of going through cities and the difficulties that we would have in revising vertical clearances within these cities or within these urban areas, and I think it is quite obvious to anyone who is familiar with the highway problem that, in these urban areas, you are involved with complicated interchanges and with a very much closer spacing of overcrossing structures.

Mr. MAY. So it was decided to bypass urban areas?

Mr. ERICKSON. So, as a result of our discussion, we came up with the proposition of eliminating the consideration of those bridges on routes through the cities wherever it was possible to get a reasonable bypass.

Mr. MAY. I notice you say in your memo and I quote:

In this estimate we have reduced the number of urban structures by about 50 percent because of the possibility of alternate or circumferential routes in these areas.

How did you arrive at 50 percent?

Mr. ERICKSON. That is purely a basis of judgment.

Mr. MAY. Using that judgment you came up with an estimated cost of what?

Mr. ERICKSON. We came up with an estimate at that time for increasing the height of the vertical clearance from 14 feet to 17 feet to $260 million.

Mr. MAY. There is another notation on that memo. What does that say?

Mr. ERICKSON. That says—

Erickson said the cost of bridges over 1,000 feet and the 42 tunnels would amount to as much as $100 million.

Mr. MAY. Which brings the total estimate up to——

Mr. ERICKSON. That brings the total estimate up to $360 million.

Mr. MAY. There we are talking simply about structures to be built in the future.

Mr. ERICKSON. That is right. We are not talking about going back and remodeling these 1930 bridges that Mr. Scherer was talking about.

Mr. MAY. Mr. Siegle, what did you do with the draft letter presented to you by Mr. Chacey?

Mr. SIEGLE. Following this draft letter, Mr. Chacey and I had some discussion on it before I referred it to my superior. I wish to clear up one question particularly with him. This was with respect to the feasibility of moving his vehicles requiring 17 feet vertical clearance over Federal-aid primary routes, over a like mileage of Federal-

aid primary routes to reach the same points throughout the United States, realizing that if we moved them over the primary routes, paralleling the Interstate System, that we would have fewer structures which would restrict the movement. And at this time, Mr. Chacey told me that the problem was not only a problem of height, but it was also a problem of weight and that the weight requirement would be such as to require the provision of the heavier bridges that we have generally on the Interstate System. In other words, the H–20, S–16 bridge regularly used for these movements.

This also involved the pavement problems as well as the bridge problem.

Mr. MAY. I present to you a copy of a memorandum dated February 12, 1959, from Mr. Paul F. Royster to Mr. E. L. Armstrong.

Who is Mr. Armstrong?

Mr. SIEGLE. Mr. Armstrong is the Commissioner of Public Roads.

Mr. MAY. Did you prepare this memo for Mr. Royster?

Mr. SIEGLE. Yes, sir.

Mr. MAY. I present this memorandum to you.

Is that a true copy of the memorandum?

Mr. SIEGLE. Yes, sir.

Mr. MAY. Would you read the second paragraph, Mr. Siegle?

Mr. SIEGLE (reading):

In discussing this draft with Mr. Chacey, Mr. Siegle has pointed out if the requirement is merely for 17 feet vertical clearance for movement of missiles, it would be more economic and quicker to alter structures along 40,000 miles of Federal-aid primary routes where intervals between structures are much greater.

Mr. Chacey's response is that the missile carriers will ultimately have weights and weight distributions requiring H–20, S–16 bridges. Also, the Department of Defense has supported National System of Interstate and Defense Highways as the system of primary importance to the national defense and it would be incongruous to develop a separate system of highways for movement of missiles.

Furthermore, they do not understand how we might persuade the States to undertake alteration of Federal-aid primary routes with 50–50 financing. Discussion of this point brought out Mr. Chacey's strong feeling that the additional cost of providing 17-foot clearance in the Interstate System should be financed on a 90–10 basis with Federal funds coming from the trust fund.

This problem has been under discussion throughout the Defense Department for more than a year and apparently always on the basis, because the Department of Defense had loaned the "defense tag" to the name of the Interstate System, they are entitled to such standards as necessary for defense purposes without cost to the Department of Defense.

Mr. MAY. Would you repeat that sentence, please?

Mr. SIEGLE (reading):

This problem has been under discussion throughout the Defense Department for more than a year and apparently always on the basis that because the Department of Defense had loaned the "defense tag" to the name of the Interstate System they were entitled to such standards as are necessary for defense purposes without cost to the Department of Defense. With extreme pressure upon them to advance the missile program within budgetary limitations, they would resist any curtailment of actual missile development production in order to provide missile funds for alteration of highways to permit movement of missiles.

Mr. BALDWIN. Mr. Chairman, could I ask a question on this point?

Mr. BLATNIK. Mr. Baldwin?

Mr. BALDWIN. This whole thing is a question of investigating how much additional cost and how much time would be required to redesign the whole highway system, both interstate and primary, to meet the needs of the missiles.

Did the Bureau of Public Roads by any chance inquire of the Defense Department how much comparatively it might cost them to design some special airplane cargo carriers that could carry these missiles, say, from San Diego to Cape Canaveral or vicinity and compare that cost with the cost of redesigning a couple hundred thousand miles of highways?

Mr. SIEGLE. No, sir, we did not make such a request.

Mr. MAY. Mr. Chacey, do you have any comment on that memorandum?

Mr. CHACEY. Well, it introduces one point that of course requires some qualification. These memorandums for records that we write, such as that one, are short and to the point. We understand them. On some occasions they may leave a little wrong impression.

This subject of the Department of Defense contribution in this, No. 1, as far as I was concerned, the problem was not so much that, as it was, what is the right vertical clearance?

No. 2, this introduces a very complicated problem and one on which there has been some comment in the press and other publications and which in my judgment is misunderstood.

The thinking of some that the Department of Defense does not contribute to the trust fund is a debatable question. In my judgment, there are two types of users and they are the users that are paying the bill. One is the private owner of a vehicle whether it be passenger car or a truck, and the other who employs somebody to use the highway and accomplish a transportation mission.

The Department of Defense is probably one of the greatest contributors to the utilization of highway transportation in the United States. We contribute to operators of trucks and buses something over $200 million annually and they in turn pay a user tax.

The Department of Defense officially has taken the position for a good many years and on several occasions we have been before this committee and refused to discuss two subjects: (1) The source of revenue to fund the Federal-aid highway program; and (2) the amount of money which the U.S. Government could economically put into highway improvement.

We did so primarily because we felt it was a quite involved area, because it was an area in which we had a department responsible for this, and that the Department of Defense had plenty to do in working out their own problems of that nature without complicating and duplicating a recommendation which more appropriately should come to Congress from the Secretary of Commerce.

Mr. SCHERER. I am not prejudging the question as to whether the Department of Defense should contribute to the trust fund or not, but doesn't it seem to you rather that the amount the Defense Department does contribute to the trust fund indirectly through user taxes paid by people who carry your equipment, is not proportionate to the costs of building these highways to meet defense needs.

If we decided, as a matter of principle, that Defense Department should contribute something to the trust fund, certainly the tax that you now pay indirectly as you have indicated, would not be sufficient when considering the standards that are needed to meet defense requirements.

Mr. CHACEY. On the contrary, it is my humble judgment that between the funds that are contributed directly—now this $200 million

annually that I referred to is Government bill of lading movements. When you go back of that and pick up all the contractors that move things on their own bill of lading, you add to it terrifically.

Mr. SCHERER. When you say $200 million, you are not talking about tax paid on gasoline and tires.

Mr. CHACEY. I am talking about what we spend.

Mr. SCHERER. Out of that $200 million only a very small part goes for gas taxes.

Mr. CHACEY. I am talking about what we spend as users of the public highways. I think this entire problem gets a little——

Mr. SCHERER. It is complicated.

Mr. CHACEY. Complicated whenever you try to define what the Department of Defense is.

Mr. SCHERER. But the average Joe could come to hardly any other conclusion than that the gas tax is a very small part of the $200 million expenditure.

Mr. FALLON. Will the gentleman yield?

Mr. SCHERER. Yes, sir.

Mr. FALLON. I would like to clear one question in my mind. Did the finance part of this subject have anything to do with your not acting more quickly than you did? Were you apprehensive that you may be called upon to pay a part in addition to——

Mr. CHACEY. As far as I was concerned, the fact that there would be an increase in the cost was very much considered and was probably the primary reason for the delay in reaching a specific figure which to recommend, but again, as far as I was concerned, that was not the problem. The problem was what vertical clearance is required to meet future needs of national defense.

Mr. FALLON. I know that is the problem, but was the delay caused in any way by the apprehension that the Department of Defense might be called on to pay the cost of this?

Mr. CHACEY. No, sir.

Mr. FALLON. Additional cost?

Mr. CHACEY. No, sir. I would like to extend this other discussion just one step further. First, what we do is primarily from the standpoint of being prepared for a period of national emergency and I think, as General Yount commented before this committee some several years ago on this very same subject, that a national emergency or a period of war is little other than an expanded national economy. During that period, who can decide what is defense and what is not and who benefits from it? The Defense Department as individuals have no stake in this any different from anybody else in the country.

Mr. SCHERER. That is the reason I prefaced my remarks, Mr. Chacey, by saying I am not saying that I feel at this moment—I may change my mind after we hear the testimony—that the Defense Department should contribute to the trust fund, but suppose we establish it as a principle that it is one of the beneficiaries and the beneficiaries are to pay for this system. Then I am saying to you that the Defense Department, through the tax that is paid on the gasoline that is used by vehicles, that transport defense equipment, is a pittance compared to the cost of building these highways to take care of defense needs as you have been asking us to do here today.

Mr. CHACEY. Well, it depends on what you classify as defense needs. No. 1, I would like to see us not talk about the Department of Defense,

but let's talk about national defense. All of the defense interests aren't consolidated in the Department of Defense. There are many defense ramifications in our Federal Government in our overall public interest that are not identified in a Department of Defense.

No. 2, our appropriation in the Department of Defense comes from the same general fund that other appropriations come from, so the Department of Defense has no money that Congress doesn't give them to do a specific job.

Mr. BALDWIN. Will the gentleman yield?

Mr. SCHERER. Yes, sir.

Mr. BALDWIN. Mr. Chacey, I would like to follow up with a question I asked Mr. Siegle a moment ago. Even if the Bureau of Public Roads establishes limitations to 16 feet, 17 feet or what, it may be 10 years before some of these roads go to that length because that is about the remaining time to build the Interstate System.

Mr. Chacey, the question I would like to ask is this: Has the Defense Department given some serious study to what could be done from a design standpoint and cost standpoint to design cargo-carrying airplanes that would be able to carry these missiles from say, San Diego to Cape Canaveral?

Mr. CHACEY. That subject has been discussed. Initially, I had the understanding that the plans were to move the Atlas missile by air. It introduces complications and apparently did because we have moved them principally by highway. Then there is, I think, an overriding consideration in this.

Well, let me finish this other point first. With respect to movement by air, all of who have had experience, know you don't move by air from origin to destination. You only move by air from someplace close to origin or someplace close to destination. Then I think the overriding consideration, as far as I am personally concerned, is that we don't know the future complexion of our national defense.

Mr. SCHERER. That is the answer to this whole thing.

Mr. CHACEY. While we were spending this volume of money for a relatively small percent, we should insure that we have a system that will meet our potential mobile defense and dispersal requirements and not keep putting off the date, we will recognize the fact that, as of the beginning of 1958, we have entered a different era from the standpoint of national defense.

Mr. SCHERER. I don't suppose anybody on this committee on either side will disagree with that last statement of Mr. Chacey. It is just commonsense.

Mr. BALDWIN. Mr. Chacey, the thing that concerns me is this: The Defense Department is asking that not only the interstate highway system, but all Federal primary and secondary routes be built to new standards because you don't know what the future may hold and I think somewhere along the way we certainly have to explore the relative costs of handling this problem in some alternate means. Air is even faster when you are talking about speed. If we ever get to a point where we really need speed in getting these missiles from the place they have been built in San Diego to Cape Canaveral, air is certainly a lot faster than highways and, somewhere along the way, we get down to wrestle with all these costs that will be required in converting not only interstate but primary and secondary roads, and arguing

with the States whether they should share 50–50 with the Federal Government when it is for our defense needs or whether it should be 90–10.

Somewhere along here I think we have to take a real serious look as to what the alternates would be as to the standpoint of air transportation and costs and redesign.

Mr. CHACEY. Let me correct one statement. The Department of Defense has not requested or recommended that the structures on the primary system be built to a higher vertical clearance standard. The Interstate System is the only one. Internally we discussed that in the Department of Defense but there was no official recommendation to the Federal Highway Administrator that structures other than on the Interstate System be increased to this vertical clearance.

Now one of the problems is to move these things quickly in the minds of some people and I hope this isn't accepted as official policy because it isn't, but in the minds of some, in the future, we must not only provide for moving them quickly and efficiently, but we must make provisions for keeping them moving if we are to be strong.

Mr. MUMMA. Mr. Chairman, may I ask a question?

Mr. CHACEY. Maybe not too fast, just so they are not at the same place tomorrow.

Mr. MUMMA. Do you think—there was a statement made yesterday that it took 9 days to move this missile and they covered 2,700 miles. Now that is pretty near 300 miles a day, isn't it? Do you have your slide rule? It seems to me 300 miles a day is a pretty good day's work for something that is as clumsy as one of those missiles on a tractor trailer.

Mr. WRIGHT. Mr. Chairman.

Mr. BLATNIK. We will have more testimony, Mr. Mumma, on the operational use of these missiles and the ultimate time.

Mr. MUMMA. Not the operational use of the missile, it was the time taken to move the missile.

Mr. WRIGHT. Mr. Chairman?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. I would like to ask a question of the witness. I am not able to see that it makes a very great deal of difference in the long run to the taxpayer the extent, if any, to which the Defense Department were to participate out of its appropriated funds in the maintenance or construction of our highways because ultimately it would come from the taxpayer anyway, and the taxpayer assumes the responsibility of maintaining adequate defense however that may be done. But here is the thing that does concern me. Perhaps it is inherent in our system and may be unavoidable in a bureaucracy and I don't use that term in the critical sense, but in an attempt to use it in a definitive sense. Why is it that on a problem which apparently is as crucial as this, it takes us 3 years from January of 1957, when it was recognized as a problem, until January of 1960 for two agencies of the Government to be able to get together and resolve it?

This troubles me a little bit. Please understand that I am not saying this in a sense of being critical of you, Mr. Chacey, or Mr. Siegle, or Mr. Erickson, or of any of those who have testified here, but isn't it frustrating to you at times that with a problem obviously as crucial as this, which is involving additional costs as it goes along in the con-

struction of overpasses which obviously are inadequate, takes 3 years to resolve it?

Mr. CHACEY. Well, it is a problem and there is not any question, when you look back at your 3 years, it looks a little unreasonable. But I think we are human beings and we have experienced the fact that our hindsight is a lot better than our foresight on many occasions and I think this is very definitely an example of that. The fact is that a good many of us were concerned about it. We have had discussions and we have been quite strong in our comments, but the fact still remains that we cannot do these things from an individual point of view, we have to bring together and consolidate the views of a lot of people before we can speak.

For example, before General Besson can speak officially for the Department of Defense, he must have official concurrence of all the military departments.

Mr. BLATNIK. He got expressions from them on two, maybe three different occasions. What is the problem? Getting together the people involved and coming to a determination?

Mr. CHACEY. There are a good many ramifications in this and some of them are pointed out in Mr. Siegle's memorandum here, alternate routes, all of these subjects were discussed.

Frankly, I think all of us were very much concerned about the increased cost of the Interstate System and frankly, if there had not been an increased cost element to this, there is not any question in my mind——

Mr. BLATNIK. That is not the answer you gave to Mr. Fallon to the question he asked you, did the cost factor play an important role in your determination, and you said no at that time. You were giving primary consideration to military requirements?

Mr. CHACEY. Wasn't he the one that asked me the question about Department of Defense funding rather than the cost? The cost was an important consideration. As I recall, Mr. Fallon's question was the fact that the Department of Defense might have to pay for this, was that a consideration? It never was to anybody to my knowledge and definitely was not mine.

Mr. SCHERER. I agree, Mr. Wright, these things are all frustrating. For 7 years the Defense Department, since 1952, has been asking this Congress to give them legislation to get rid of potential saboteurs and espionage agents in defense plants, and this Congress has not resolved that issue yet. It is a matter that is far more critical to the defense of this Nation than are these vertical clearances.

Mr. WRIGHT. Of course, that is very true. I get frustrated sometimes in Congress. I have tried to pass a bill or two of my own for several years and I know you have, too, but this does trouble me because it seems to be at the heart of something that is very crucial to us. You have said, I believe, that the amount of the extra cost was a serious problem and a deterrent and the thing that slowed down your decision, but not who was to pay the cost. Is that about it?

Mr. CHACEY. In general, that is correct.

Mr. WRIGHT. Why is it, this is the thing that troubles me——

Mr. CHACEY. Let me add one more thought to that. I think it had the effect of slowing down the decision but it did not have any effect on the——

Mr. WRIGHT. Ultimate decision itself?

Mr. CHACEY. On the ultimate decision itself.

Mr. WRIGHT. Why is it now—you are certainly an expert in this field, as is Mr. Siegle, as is Mr. Erickson—why is it that people at the operating level, who are aware of these problems, cannot get their message through to the higher echelons of command who make the decision?

Mr. CHACEY. Well, that is a problem of communication which I am sure exists with all of us on many occasions. I actually have felt that I was not during this period. I made the statement that I just was not getting over to my people the things that were worrying me.

Mr. BLATNIK. Does that mean you don't get a chance to talk to them as often as you should?

Mr. CHACEY. No, sir, it does not. I have never had an occasion in which my immediate superiors or anybody in the Department of Defense has given me a hard time from the standpoint of meeting with them and discussing problems with them.

Mr. BLATNIK. Well, if you have had no difficulty in meeting with them, discussing it with them, what is it? Is it difficult for them to understand what you are trying to say?

Mr. CHACEY. It is difficult, I think, and my personal opinion is, that it has been difficult to get over to the people the fact that they are entering a new era in which we are going to build many thousands of overpass structures and they won't be able——

Mr. BLATNIK. You said right from the beginning you knew about the system back in 1956, we debated it for 2 years in Congress.

Mr. CHACEY. The point is, I think it has been difficult for people to realize the effect of building thousands of overpass structures or the movement of the occasional oversize item, the fact that they have always been able to go around and get it there——

Mr. SCHERER. You said moving what kind of item?

Mr. CHACEY. Oversize items; occasional movement of oversize items, because they have always been able to go around and get there maybe a day late, or maybe 2 days later or a week later, but they have been able to accomplish this.

Mr. BLATNIK. Mr. May?

Mr. MAY. Mr. Chacey, this may be an indication of difficulty that your people encounter. Mr. Siegle, in Mr. Royster's memo to Commissioner Armstrong, which you prepared there is some indication of the fact that an early meeting was desired between General Besson and Mr. Tallamy. Is that the memo?

Mr. SIEGLE. Yes, sir, that is in the memorandum.

Mr. MAY. What does it say? Will you quote the sentence?

Mr. SIEGLE. First paragraph, I say:

Attached is a draft of a proposed letter to Mr. Tallamy from General Besson, Chief of Transportation, Department of the Army, advocating vertical clearances of 17 feet for the Interstate System, a subject which General Besson wishes to discuss with Mr. Tallamy in an early meeting.

I would like, while I have a chance here, to comment further on this second paragraph upon which several questions have been raised.

I would like to make it quite clear first, that the reason that we got into this discussion of financing was not any desire on either of our parts to discuss the philosophy of financing or how it should

be handled, but it came about through a fact that we understand, as implied in the memorandum but which may not be so clear to you, I would like to explain that when Mr. Chacey spoke of the difficulties we may have in getting the States to undertake alteration of Federal-aid primary routes on a 50–50 basis, I then told him and reminded him of the possibility of doing this under what we call our defense access road program, and we have a standing procedure where any special requirement of the defense requires alteration of a route of that importance to handle a special defense need, it can be entered in that program and I was simply trying at that time to tell him that we could handle this.

I was answering his question that we could handle this on the Federal-aid primary system if weight were not a problem.

Now, I think also in answer then to Mr. Baldwin's question, where he asked about air transportability, we did not ask about this because we were being told here that this was not only a size problem, but a weight problem, which would preclude its possibility of transport by air.

Mr. MAY. Thank you, Mr. Siegle.

Mr. BALDWIN. Could I ask one question? You say "preclude its transport by air." How do we know?

When we are talking about construction of highways over a 10-year period in the future, how do we know whether cargo-carrying planes can't be designed in that same period of time that would carry missiles of these weights?

Mr. SIEGLE. I cannot answer this because weight, I will say it this way, because the weight was pointed out to us as a problem as well as size.

We saw no occasion with our understanding of this problem to ask that this kind of a study be made by the Department of Defense.

Mr. BALDWIN. If I have understood the testimony on the weight of some of these missiles, I have also had occasion at Travis Air Force Base, which is the great MATS center for the Pacific coast, to get some idea of the weights carried by some of these cargo-carrying planes and these weights of these missiles do not seem to impress me particularly in comparison to some of the weights of newer type of cargo-carrying planes.

I do not know that there is a very great variation as far as MATS capacity.

Mr. SIEGLE. You see, the Atlas and the Titan missiles do not have a weight problem, and what he was talking about then was other future weapons and weapon systems that would involve the weight problem.

He was not discussing the Atlas missile and if this problem pertained only to the Atlas missile, currently with us it could be solved cheaper on the highway by this course that I discussed with him in February of 1959 which would employ the alternate routes which are able to carry this size more economically on the Interstate System.

Mr. BLATNIK. Mr. May?

Mr. MAY. We were discussing your difficulties at the operating level. We were discussing delays. The memo points out that Gen-

eral Besson wishes to discuss with Mr. Tallamy the subject at an early meeting, the date is February 12, 1959.

Mr. Chacey is aware of it. You, Mr. Siegle, are aware of it, Mr. Paul Royster and Commissioner Armstrong. When was the meeting between General Besson and Mr. Tallamy finally held?

Mr. SIEGLE. The meeting was May 29.

Mr. MAY. May 29, 1959.

Mr. BLATNIK. What was the reason for that long delay? You told me earlier, of course, that within your own agency, your own Department, you had no difficulty getting together with your superiors. You all live in the same town.

Mr. SIEGLE. I have had no problem in getting in touch with my superiors.

Mr. BLATNIK. Is the problem now getting the superiors together? Is that it?

Mr. SIEGLE. There were problems of this type, yes, sir, that on dates that were mutually convenient, it is possible. There were a number of people involved. However, I would like to point out before coming to that, that there were other things that were involved in this study. I did make this report on February 12 to my superior and there was a staff meeting at Public Roads in March on this subject.

Mr. MAY. Mr. Siegle, we'll get to that in just a moment. As of February 12, 1959, was Mr. Tallamy aware that vertical clearance problem existed?

Mr. SIEGLE. I do not think so.

Mr. MAY. Here is a situation where you and the other people in the Bureau of Public Roads became aware of the problem at least as early as March of 1958 and Mr. Chacey was asking for estimates. Here we are in January 1959, and apparently Mr. Tallamy is not yet aware of the problem.

Mr. SCHERER. January of 1959?

Mr. MAY. Yes, sir; we are discussing the period of February of 1959.

Mr. BALDWIN. I would like to ask counsel a question. Is Mr. Tallamy going to be called?

Mr. MAY. Yes, sir.

Mr. BALDWIN. I don't see why we should ask somebody else the question of what Mr. Tallamy may have thought——

Mr. BLATNIK. You have a point on a question, but we want to document the procedures and methods used in trying to arrive at a determination of a very critical problem.

Mr. BALDWIN. But, Mr. Chairman, I would like to say the question asked was: Was Mr. Tallamy aware? This is something in a man's mind. I don't see why in the dickens——

Mr. BLATNIK. He just told us he had no difficulty in getting access to his superiors, so he would know whether or not they knew.

Mr. BALDWIN. But when you are going to call the witness involved, to ask somebody else's understanding of what he had in his mind, I think that is irrelevant. We are going to have the man here. Let's ask him.

Mr. MAY. Congressman, my next question was going to be directed to the witness, Mr. Siegle. If this was a grievous problem, why didn't you alert Mr. Tallamy in March of 1958?

Mr. SIEGLE. I had referred this to my superiors on February 12. During the period following February 12——

Mr. MAY. I think——

Mr. SCHERER. Let him finish. He wanted to say something about it before.

Mr. MAY. I directed my question to the period of March 1958 when you first became aware of the problem.

Mr. SIEGLE. We assembled information late in February which would be helpful in a staff conference of the type recommended by Mr. Royster on February 12.

Mr. MAY. That is 1959, Mr. Siegle.

Mr. SIEGLE. Why did I not alert him?

Mr. MAY. Yes, sir.

Mr. SIEGLE. I had told my superior in both March and June of 1958.

Mr. MAY. But to your knowledge Mr. Tallamy was not aware of it?

Mr. SIEGLE. I don't know.

Mr. MAY. You did not make sure that Mr. Tallamy became aware of it in 1958?

Mr. SIEGLE. No, sir; I would not jump channels on a point of this type. My channel is through my superior to Mr. Tallamy normally.

Mr. MAY. What took place in March 1959?

Mr. SIEGLE. In March 1959, the Bureau had a staff conference on this subject, on March 16. By that time I was able to get them some pictures of what this Atlas transporter looked like from the Department of Defense. We had developed some maps showing the frequency of structures that would be encountered on the Interstate System and frequency of structures that would be found on other routes, Federal-aid primary type, which I discussed with Mr. Chacey so they could have an understanding and have a picture of the relationship.

Of course, they had the understanding but this was a demonstration of quantitative relationship in graphic form.

Mr. MAY. Did you prepare some notes for use at the staff meeting held March 16, 1959?

Mr. SIEGLE. Yes, sir.

Mr. MAY. I present this to the witness, Mr. Chairman.

Would you read that—do you call that a note or memorandum?

Mr. SIEGLE. I think of this as a set of notes for the staff meeting.

Mr. MAY. Prepared for whose benefit?

Mr. SIEGLE. This was prepared for Mr. Royster's benefit so he could present the matter at the conference or the staff meeting.

Mr. MAY. Would you read those notes, Mr. Siegle?

Mr. SIEGLE. All right—

1. General Besson wishes to talk with Mr. Tallamy regarding geometric standards for Interstate System. (Also traffic regulation.)

2. One purpose of Interstate System designation is to serve the national defense.

(*a*) System designation has been coordinated with Department of Defense.

(*b*) Name of system changed in 1956 to National System of Interstate and Defense Highways.

3. Letters exchanged October–November 1957 to effect that 14-feet vertical clearance is adequate.

4. Proposed letter from General Besson to Mr. Tallamy was circulated to Commissioner, and Assistant Commissioner and General Counsel last month:

(*a*) New weapons require more clearance.

(*b*) Better understanding of restrictive effect of Interstate System.

(*c*) Present recommendation of 17 feet based on long and thorough study in Department of Defense: 1. Applicable only in rural areas and on belt routes (even use primary system around towns).

(*d*) Cost net to exceed $360 million.

5. Discussions with Mr. Chacey re use of primary routes exclusively—unacceptable to Department of Defense:

(*a*) Also need H–20, S–16 bridges.

(*b*) Incongruous to develop separate system of missile routes.

(*c*) Question our ability to persuade States to accomplish with 50–50 financing.

(*d*) Department of Defense expects financing from Trust Fund.

6. We are involved right now. Memorandum from Chamberlain reports adjustment of interchange design in Wyoming to accommodate Atlas missile 15 feet, 3 inches high.

Mr. MAY. What is meant by the words "We are involved right now"?

Mr. SIEGLE. We were involved right now with the problem of changing a design of an interchange in Wyoming to provide more clearance to permit an Atlas missile to move from its base to its site. We have a number of these problems throughout the country. We are working with the Department of Defense in another area on provision of access roads between various Atlas and Titan missile bases and satellite sites. There are a number of roads involved, as many as nine to the Atlas base, and for distances up to as high as 60 miles and in this particular case one of the routes between the base and the site would use the Interstate System. In this particular move, it is a desire to move the missile between base and site with these verniers on that were discussed yesterday, and it requires the full clearance and you can't get down to this 13 foot 11 or 9 that was discussed.

Mr. MAY. How much was required?

Mr. SIEGLE. Something that would permit 15-foot, 3-inch passage in this case as reported.

Mr. SCHERER. Let's keep this thing in a little perspective, Mr. Siegle. Let me ask you this, while you had these discussions and were aware that Mr. Chacey and people in the Department of Defense were questioning, and properly so, the inadequacy of a 14-foot vertical clearance, the Bureau of Public Roads couldn't act until the Defense Department finally resolved the issues within the Department of Defense and decided what it needed and what it wanted; is that right?

Mr. SIEGLE. That is quite correct. Until January 1959 we didn't know whether it was an increase from 14 to 17 or 20 feet or what might be asked for.

Mr. SCHERER. When were you finally advised that the Bureau of Public Roads and Defense Department had made up its mind that it wanted 17-foot clearance; when was that?

Mr. SIEGLE. At the time that Mr. Chacey brought me the letter on January 29.

Mr. SCHERER. What year?

Mr. SIEGLE. 1959. This was a rough draft, I called it a letter. It was a rough draft of a letter.

Mr. SCHERER. When was the first time that the Bureau of Public Roads knew that the Defense Department had reached a decision on which the Bureau could act?

Mr. SIEGLE. October 1, 1959.

Mr. SCHERER. October 1, 1959. That was shortly before the AASHO convention; wasn't it?

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. Within 12 days Mr. Tallamy presented that to AASHO as he was required to do under the law.

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. He got action.

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. It wasn't until October 1959 that the Defense Department finally acted officially and requested the Bureau of Public Roads to take some action to increase the vertical clearance from 14 to 17 feet?

Mr. SIEGLE. That is correct, sir.

Mr. BLATNIK. That is what puzzles me, you see, Mr. Scherer, they had no difficulty in holding conferences in the Department of Defense, notifying each other, reaching their superiors and, in the very final phase reaching a determination we have a lapse of over 9 months or of about 9 months.

Mr. SCHERER. While there were these discussions and there may or may not be explanations for the delay in the Department of Defense, what I am trying to point out is, that it wasn't until October that the Defense Department finally resolved this issue among the various agencies of the Defense Department and reported to the Bureau of Public Roads.

Mr. BLATNIK. That is more than 2 years after sputnik.

Mr. SCHERER. All right. I just want to keep the record clear and then we can draw our own conclusions.

Mr. MAY. Mr. Chairman, may we make exhibits out of these last three documents that have been presented to Mr. Siegle?

Mr. BLATNIK. Without objection, the three documents properly numbered and identified as memorandums presented to Mr. Siegle and Mr. Erickson will be inserted in the proper place in the record.

(Exhibits 17, 18, and 19 follow:)

EXHIBIT 17

U.S. GOVERNMENT,
BUREAU OF PUBLIC ROADS,
February 6, 1959.

Office memorandum.
To: Mr. Arthur G. Siegle.
From: E. L. Erickson, Chief, Bridge Division, Engineering, Washington, D.C.
Subject: Interstate System vertical clearances.

In accordance with your request, we have made an estimate of the additional cost of increasing the underclearance of all structures over the interstate roads from 14 feet to 17 feet. In this estimate, we have reduced the number of urban structures by about 50 percent because of the possibility of alternate or circumferential routes in these areas. Because of incomplete information (figures obtained from Mr. Foster), the result is, of course, very approximate. Based on a previously estimated percentage increase of 7.8 percent for an increase in underclearance from 14 feet to 17 feet, we have arrived at a cost figure of $260 million.

Based on a total cost of the Interstate System of $37.37 billion, the cost of increase represents 0.69 percent of the total estimated cost of the system.

It should be brought out that the 0.69 percent does not include approximately 7,000 bridges over 1,000 feet in length and 42 tunnels over 500 feet in length, of which we have no means of estimating the added cost for increased underclearances.

On February 11, Mr. Erickson said cost of bridges over 1,000 feet, and the 42 tunnels could amount to as much as $100 million.

EXHIBIT 18

BUREAU OF PUBLIC ROADS,
February 12, 1959.

To: Mr. E. L. Armstrong, Commissioner.
From: Paul F. Royster, Assistant Commissioner for Operations.
Subject: Interstate System vertical clearance requirements for movement of missiles.

Attached is a draft of a proposed letter to Mr. Tallamy from General Besson, Chief of Transportation, Department of the Army, advocating vertical clearance of 17 feet for the Interstate System, a subject which General Besson wishes to discuss with Mr. Tallamy in an early meeting.

In discussing this draft with Mr. Chacey, Mr. Siegle has pointed out that if the requirement is merely for 17 feet vertical clearance for movement of missiles, it would be more economic and quicker to alter structures along 40,000 miles of Federal-aid primary routes where intervals between structures are much greater. Mr. Chacey's response is that the missile carriers will ultimately have weights and weight distributions requiring H–20 S–16 bridges. Also, the Department of Defense has supported the National System of Interstate and Defense Highways as the system of primary importance to the national defense and it would be incongruous to develop a separate system of highways for movement of missiles. Furthermore, they do not understand how we might persuade the States to undertake alteration of Federal-aid primary routes with 50–50 financing. Discussion of this point brought out Mr. Chacey's strong feeling that the additional cost of providing 17-foot clearances on the Interstate System should be financed on a 90–10 basis with Federal funds coming from the trust fund. This problem has been under discussion throughout the Defense Department for more than a year and apparently always on the basis that because Department of Defense had lent the "defense tag" to the name of the Interstate System, they were entitled to such standards as necessary for defense purposes without cost to the Department of Defense. With extreme pressure upon them to advance the missile program within budgetary limitations, they would resist any curtailment of actual missile development and production in order to provide missile funds for alteration of highways to permit movement of missiles.

As for the cost, Mr. Erickson has estimated the cost of increasing clearances to 17 feet for routes referred to in the subject draft letter, at $260 million for structures overpassing the system, plus a sum which could amount to as much as $100 million for bridges over 1,000 feet and tunnels, or a total not to exceed $360 million.

The 17-foot requirement is one that has been developed by very careful analysis in the Defense Department. During their discussions they have considered much greater sizes of missiles and have concluded that they can now define the optimum height of missile-carrying vehicle, and have in mind breaking down their larger missiles to fit this dimension for transportability.

I propose that this matter be discussed at our next staff meeting prior to referring the matter to Mr. Tallamy.

EXHIBIT 19

MILITARY NEED FOR ADDITIONAL VERTICAL CLEARANCE, INTERSTATE SYSTEM

1. General Besson wishes to talk with Mr. Tallamy regarding geometric standards for Interstate System (also traffic regulation).

2. One purpose of Interstate System designation is "to serve the national defense":

(*a*) System designation has been coordinated with Department of Defense.

(*b*) Name of system changed in 1956 to "National System of Interstate and Defense Highways."

3. Letters exchanged October–November 1957 to effect that 14 feet vertical clearance is adequate.

4. Proposed letter from General Besson to Mr. Tallamy was circulated to Commissioner and Assistant Commissioner and General Counsel last month:

(*a*) New weapons require more clearance.

(*b*) Better understanding of restrictive effect of Interstate System.

(*c*) Present recommendation of 17 feet based on long and thorough study in Department of Defense: 1. Applicable only in rural areas and on belt routes (even use primary system around towns).

(*d*) Cost not to exceed $360 million.

5. Discussions with Mr. Chacey re use of primary routes exclusively—unacceptable to Department of Defense:

(*a*) Also need H–20, S–16 bridges.

(*b*) Incongruous to develop separate system of missile routes.

(*c*) Question our ability to persuade States to accomplish with 50–50 financing.

(*d*) Department of Defense expects financing from trust fund.

6. We are involved right now. Memorandum from Chamberlain reports adjustment of interchange design in Wyoming to accommodate Atlas missile 15 feet 3 inches high.

MARCH 16, 1959.

Mr. SIEGLE. We don't seem to have that.

Mr. SCHERER. While they are looking for those exhibits, Mr. Chacey, in dealing with the Bureau of Public Roads on this matter which has been under discussion, have you had the fullest cooperation from the Bureau of Public Roads?

Mr. CHACEY. As far as Mr. Siegle is concerned the answer is, "Yes, we have had full cooperation from the Bureau of Public Roads." In connection with your other question to Mr. Siegle, we had pretty much made up our mind in January of 1959 to what we were proposing to recommend.

The coordination that was necessary from that date on until May was not entirely a defense problem, it was one internally of the Bureau of Public Roads. To clarify this October–January date——

Mr. SCHERER. You had the problem yourself a pretty long time, didn't you? Didn't Defense have the problem under consideration a long time?

Mr. CHACEY. We certainly did.

Mr. SCHERER. The Bureau should have a little time after you made up your minds to sort of study it.

Mr. BLATNIK. Mr. May?

Mr. MAY. Mr. Chairman, could we present this memorandum to Mr. Siegle?

Mr. Siegle, were you present at the staff meeting held on March 16, 1959?

Mr. SIEGLE. No, sir.

Mr. MAY. Did you receive any specific instructions as a result of that meeting?

Mr. SIEGLE. Yes, sir.

Mr. MAY. What were they?

Mr. SIEGLE. On March 16, my superior, Mr. Royster, said Mr. Tallamy wanted answers to two questions. I could make this clearest perhaps by reading from the answers we gave him later, to save time?

Mr. MAY. Yes, would you, Mr. Siegle, and we will make that an exhibit.

Mr. SIEGLE. On March 23, a memorandum from Mr. Royster to Mr. Tallamy. He said—

In response to two questions you asked March 16: One, the $360 million estimate covered only the difference in cost of building structures with 17 feet clearance in lieu of 14 feet and did not take into account the cost of raising and rebuilding structures already completed or underway, nor raising or rebuilding structures on existing facilities incorporated in the system. The total estimated cost, including this reconstruction, is $875 million.

Now that estimate is one Mr. Erickson supplied on March 18, 2 days after the staff meeting.

Mr. BALDWIN. Mr. Chairman, could I ask a question at that point? When you mentioned the cost of reconstructing and gave a figure of somewhat over $800 million, does that apply to all the structures that have been built all the way back to 1930 that now appear somewhere in the Federal Interstate Highway System?

Mr. ERICKSON. Yes, that is correct.

Mr. BALDWIN. In other words, that is not limited at all to the number of structures that were built since the 1956 act?

Mr. SIEGLE. Included none.

Mr. MAY. Mr. Siegle, can we straighten that matter out; what does that figure include?

Mr. SIEGLE. This includes——

Mr. MAY. That is limited to future construction, is that true?

Mr. SIEGLE. I am sorry, total estimated cost including this reconstruction is $875 million.

Mr. MAY. Total cost of building the structures in the future and going back and revamping existing structures.

Mr. SIEGLE. That is correct. I will correct that, that $875 million is the total cost as estimated at that time.

Mr. BALDWIN. Including all the 8,000 structures that have been incorporated in the Interstate System, some of which have been built as far back as 1930.

Mr. SIEGLE. Plus those to be built, this is a comprehensive cost estimate covering everything.

Mr. ROBISON. May I break in? Mr. Chacey indicated earlier in his opinion that not all interstate structures needed to be built to 16 feet or 17 feet, whichever figure you want to talk about, for the possible reason that in urban areas where there are 14 foot structures, there are also circumferential routes available, so that for defense purposes or the missile problem particularly, those circumferential routes would suffice.

I think he also suggested that perhaps certain designated interstate or cross-country missile routes might be worked out. I am wondering, Mr. Siegle, if in connection with our immediate problem of 2,259 structures, which is in the figure you just gave us, whether that covers all structures or whether any attempt has been made to break it down to only those that you and the Army people could agree upon were necessary to be rebuilt to 16 feet or 17 feet?

Mr. MAY. Pardon me, Congressman, if we move to the next item which is Mr. Erickson's estimate referred to in this memo, I think it explains it very nicely. May we do that?

Mr. SIEGLE. Yes, sir.

Do you wish me to read the second paragraph of this other memorandum first and answer two questions or do you want to go to the estimate now?

Mr. MAY. Do that and then we will move on to the estimate.

Mr. SIEGLE. Second response. In response to the second question, the missile carrier now being used could probably be redesigned to support the Atlas missile at a slightly lower level. The Department of Defense is making further studies of this matter. However, this missile is not the basis for present recommendations for a 17-foot vertical clearance. The Department of Defense has studied this problem for more than a year and has considered clearances as much as 26 feet. The 17-foot clearance is considered by the Department of Defense to be as low as they can accept for movement of future missiles when transporting in the most efficiently designed transporters.

Mr. MAY. Thank you. So we know as of this date, at least as of the March 1959, Mr. Tallamy was aware of the situation.

I present another memorandum to you, Mr. Siegle. You may present this to Mr. Erickson, the estimate drawn up in March by Mr. Erickson. Is that a true copy of your memorandum, Mr. Erickson?

Mr. ERICKSON. That is.

Mr. MAY. We will make these Exhibits 20 and 21.

Mr. BLATNIK. Without objection, it is so ordered.

(Exhibits 20 and 21 follow:)

EXHIBIT 20

BUREAU OF PUBLIC ROADS,
March 23, 1959.

To: Mr. B. D. Tallamy.
From: Paul F. Royster.
Subject: Interstate System vertical clearance requirements for movement of missiles.

In response to two questions you asked March 16:

1. The $360 million estimate covered only the difference in cost of building structures with 17 feet clearance in lieu of 14 feet and did not take into account the cost of raising and rebuilding structures already completed or underway, nor raising and rebuilding structures on existing facilities incorporated in the system. The total estimated cost, including this reconstruction, is $875 million.

2. The missile carrier now being used could probably be redesigned to support the Atlas missile at a slightly lower level. The Department of Defense is making further studies of this matter. However, this missile is not the basis for present recommendations for the 17-foot vertical clearance. The Department of Defense has studied this problem for more than a year and has considered clearances as much as 26 feet. The 17-foot clearance is considered by the Department of Defense to be as low as they can accept for movement of future missiles when transported in the most efficiently designed transporters.

EXHIBIT 21

U.S. GOVERNMENT,
BUREAU OF PUBLIC ROADS,
March 31, 1959.

Office memorandum.
To: Mr. A. G. Siegle, Chief, Defense Plans and Operations Division.
From: E. L. Erickson, Chief, Bridge Division, Engineering.
Subject: Estimated cost of increased underclearances on the Interstate System.

In accordance with your request, we have revised and enlarged our earlier estimate of the additional cost for 17-foot vertical underclearances of the In-

terstate System to include the raising and reconstruction of structures already built under the 1956 act from July 1, 1956, to February 28, 1959, and the cost of raising and rebuilding structures on existing facilities incorporated in the Interstate System.

Original estimate	$360,000,000
Original estimate (adjusted for bridges completed or underway on the system)	332,000,000
Cost of raising and rebuilding structures already completed or underway	205,000,000
Cost of raising structures on existing facilities incorporated in the system	[1] 338,000,000
Total	875,000,000

[1] Bridges on toll roads, $72 million.

NOTE.—The above estimates do not include bridges and tunnels listed on the 108–D study table 109 (toll bridges and toll tunnels).

Mr. MAY. Mr. Erickson, would you read that?

This estimate does become important.

Mr. ERICKSON. This memorandum was addressed to Mr. Siegle by me, dated March 31, 1959.

In accordance with your request, we have revised and enlarged our earlier estimate of the additional cost for 17 feet 0 inch to include the raising and reconstruction of structures already built under the 1956 act from July 1, 1956, to February 28, 1959, and the cost of raising and rebuilding structures on existing facilities incorporated in the Interstate System.

Original estimate——

Mr. MAY. Excuse me, Mr. Erickson, would you explain what you mean by existing facilities incorporated into the system?

Mr. ERICKSON. Those were the facilities—that is the construction that had been incorporated into the system. That included such items as some of the toll roads.

Mr. MAY. Those are actually the old bridges we have been discussing?

Mr. ERICKSON. Those were the older construction, the construction prior to 1956.

Mr. MAY. Would you go on with your estimate?

Mr. ERICKSON. Original estimate was $360 million.

Mr. MAY. That was the original estimate you drew up on March 6?

Mr. ERICKSON. That is right.

Mr. MAY. Pardon me, February 6.

Mr. ERICKSON. February 6, and that was the estimate for building all structures in the future.

Mr. MAY. To 17 feet.

Mr. ERICKSON. That is right. The next item in the memorandum was:

Original estimate adjusted for bridges completed or underway on the system—$332 millions. Cost of raising and rebuilding structures already complete or underway—$205 million. Cost of raising structures on existing facilities incorporated into the system, $338 million, or a total of $875 million.

There is a note here under the item of raising structures on existing facilities incorporated in the system, "Bridges on toll roads, $72 million."

Mr. MAY. Now, we have here your original estimate of February 6, 1959, that was $360 million for building all future bridges to 17 feet.

Mr. ERICKSON. That is correct.

Mr. MAY. Now in March of 1959, that original estimate is reduced somewhat because——

Mr. ERICKSON. Because some bridges built.

Mr. MAY. There have been bridges built, so that is reduced to $332 million.

Mr. ERICKSON. That is right.

Mr. MAY. Now, for the first time, we get into cost of raising and rebuilding structures already completed or underway on the Interstate System and that cost is $205 million.

Mr. ERICKSON. Right.

Mr. MAY. Those had been built since 1956?

Mr. ERICKSON. That is right.

Mr. MAY. Now, we come to old structures or those structures on existing facilities incorporated into the system and a total cost of $338 million, giving you a grand total of $875 million as of——

Mr. ERICKSON. March 31, 1959. And then there is an additional note in this memorandum—

The above estimates do no include bridges or tunnels listed on the 108 study table 109—toll bridges and toll tunnels.

Mr. MAY. Any toll bridge or toll tunnel not included?

Mr. ERICKSON. That was in that list and is not included.

Mr. ROBISON. At the same time, Mr. May, his estimate covers all structures and no attempt is made by Mr. Erickson, as I understand it, to weed out those that might not reasonably be required to be raised.

Mr. MAY. I don't believe so, Mr. Congressman.

Mr. ERICKSON. This estimate was made after the time when the decision was made that we could bypass many of the urban areas, so it only included a part of the structures that would be included in the urban system.

Mr. ROBISON. A part then of the 2,259 figure you gave us a while ago?

Mr. MAY. Pardon me, Congressman?

Mr. ROBISON. A part of the 2,259 figure we had earlier?

Mr. MAY. A part of those have been eliminated.

Mr. MAY. This is the first time we had a reasonably firm estimate and pertains only to those structures that would possibly be affected by this problem.

Mr. ERICKSON. By this problem, yes.

Mr. MAY. Thank you, Mr. Erickson. Mr. Siegle, do you have available with you a memo dated April 15, 1959? I presented a copy to you?

Mr. SIEGLE. Yes, I have a copy of it.

Mr. MAY. Would you read that, please.

Mr. SIEGLE. This is a memorandum to Mr. Royster by myself.

Mr. MAY. Can we have that made as an exhibit?

Mr. BLATNIK. Without objection, it is so ordered.

(Exhibit 22 follows:)

EXHIBIT 22

BUREAU OF PUBLIC ROADS,
April 15, 1959.

To: Mr. Paul F. Royster.
From: A. G. Siegle.
Subject: Interstate system vertical clearances.

On April 15, Mr. Chacey came to my office to express his concern over a report he has received that the subject of increased vertical clearances on the Inter-

state System has been discussed with the Ways and Means Committee; and that the impression has been left with that committee that the trucking people had influenced the Department of Defense. The Department of Defense has been quite independent of any trucking influence, and has been very sincere and objective in its studies of problems of moving missiles. He is under pressure of his people to obtain action on the Department of Defense proposal for clearances adequate for movement of missiles and realizes that delays in resolving this problem raises the cost of an ultimate solution.

He wishes to have expressed to our Administrator and Commissioner his concern over any inference of trucking influence on the Department of Defense, and his anxiety for an early meeting between General Besson and the Administrator to discuss the draft of a letter referred to Public Roads more than 2 months ago.

Mr. BALDWIN. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. Mr. Siegle, this does present this problem, does it not, that if the Congress deemed it desirable to increase clearances to, say, 16 feet or 17 feet or some other feet because of the needs of the Department of Defense, this in effect will be a windfall to the trucking industry in the sense of their competition with the merchant marine or railroad because, up to now, what they have been able to carry over the highways has been limited to the lower clearances whereby after that date they will be able to carry other larger things, some of which as we saw in pictures yesterday are not related to defense contracts or anything else, as a result of increasing limits and standards on the Interstate Highway. This would be true, would it not?

Mr. SIEGLE. They would benefit by this to the extent that they could operate exclusively on the Interstate System. There would still be the problem of passage over the other routes.

Now, the kinds of loads we were looking at yesterday, to begin with, are oversize loads and require special permit. They are beyond legal limits for normal operations. They are beyond Department of Defense regulations for normal development or vehicles.

Any vehicles developed by them beyond their regulations, they understand they have no mobility for these and similarly, those people who have to move oversized loads——

Mr. BALDWIN. But they would be able to function on 41,000 miles of Interstate highways.

Mr. SIEGLE. They would benefit as they could operate exclusively on Interstate but when they left it they would have the same problems confronting them as they have otherwise and on this question of oversized movements, regardless of what the clearance may be raised to, we are always going to have them.

You don't eliminate the problem by raising your vertical clearance. If it is to the benefit of Department of Defense to develop a vehicle of limited mobility, understanding that it has limited mobility, to heights greater than any clearance we are building, then this is their affair.

They have this to consider and also the private truckers have the same problem and if they can move beyond legal load limits, legal height limits, and get permits to do it, they do so.

Mr. BALDWIN. Thank you.

Mr. MAY. Mr. Siegle, referring back to that memo which was just read, here is the situation where Mr. Chacey is expressing his anxiety

for an early meeting and this is April. We started on January 29. There was an agreement that we must bring together General Besson and Mr. Tallamy. On April 15, according to this memo, Mr. Chacey was urging that an early meeting be held and once again, when was that meeting held?

Mr. SIEGLE. The meeting was held May 29.

Mr. MAY. Between General Besson and Mr. Tallamy.

Mr. SIEGLE. That is correct.

Mr. MAY. Mr. Chacey, could you explain the reason for the delay from January to May 29?

Mr. CHACEY. It is my understanding the delay in initial part was the desire of the Bureau of Public Roads to do what we asked them to do, to study this thing and see how it fitted into their responsibilities of administering the Federal-aid highway program.

Mr. MAY. Would you explain the reason for the delay from April 15 to May 29?

Mr. CHACEY. It is also my understanding, and I do recall on some occasions, a date was discussed and conflicts in availability of personnel due to travel outside of Washington did cause some delay. I know that.

It is my understanding that Mr. Tallamy had dates that were not available and I know that General Besson had some dates that were not available because he was out of town and although I recall at the time it was my understanding that he made an oversea trip during this period, but I checked with his secretary the other day and she advised me that trip had been postponed until June, but he had been out of town a good many days on travel. I am not aware of the complications with respect to Mr. Tallamy.

Mr. MAY. Mr. Siegle, that meeting was scheduled for 10:30 a.m.; is that true?

Mr. SIEGLE. I found a note here that it was scheduled for 11 o'clock, and as I recall it, it was originally 11 o'clock and then a desire, I think, at the last minute to advance it to 10:30.

Mr. MAY. What time did Mr. Tallamy arrive?

Mr. SIEGLE. Mr. Tallamy was detained; he could not make the 10:30 time, as it was finally set up, and it was some time after 11 before he arrived.

Mr. MAY. Approximately 11:15?

Mr. SIEGLE. I don't recall it accurately.

Mr. MAY. Mr. Chacey, did General Besson have a 12 noon meeting on that day?

Mr. CHACEY. It is my understanding he did; yes, sir.

Mr. MAY. What time did he leave the meeting?

Mr. CHACEY. I think we actually left Mr. Tallamy's office just a few minutes before 12. I don't recall the exact time.

Mr. MAY. So the meeting lasted for somewhat less than an hour.

Mr. CHACEY. I believe that is correct; yes, sir.

Mr. MAY. Would it be closer to a half hour?

Mr. CHACEY. Sometime between a half hour to 45 minutes, I think. Approximately 45 minutes.

Mr. MAY. Mr. Siegle, were you satisfied with the meeting?

Mr. SIEGLE. I was disappointed in the outcome of the meeting.

Mr. MAY. Why?

Mr. SIEGLE. Mr. Tallamy had asked several questions of General Besson during this meeting, one of which concerned this question of weight upon which I had many previous conversations and I understood from General Besson that weight was not a problem, but merely vertical clearance.

This was disappointing to me in view of the exploration I had made of this point before, because as I indicated, I felt if it were only a size problem, the matter could be handled and solved more economically by alteration of structures on the Federal-aid primary system.

Mr. MAY. Mr. Siegle, may I present to you a memorandum from you in the file dated June 5, 1959. Do you recognize that as a true copy of the memorandum?

Mr. SIEGLE. Yes, sir.

Mr. MAY. Can we have that made an exhibit?

Mr. BLATNIK. Without objection, it is so ordered.

(Exhibit 23 follows:)

EXHIBIT 23

U.S. GOVERNMENT,
BUREAU OF PUBLIC ROADS,
June 5, 1959.

Office memorandum.
To: Files.
From: A. G. Siegle.
Subject: Increased vertical clearance for the Interstate System.

On May 29 General Besson and Mr. Chacey, Transportation Corps, Department of the Army, met with Mr. Tallamy, Mr. Armstrong, Mr. Royster, Mr. LaBoon, and myself regarding the military proposal for increasing the vertical clearance on the Interstate System from 14 feet to 17 feet. Unfortunately other commitments by Mr. Tallamy and General Besson made it necessary to condense this meeting to a point which would not allow as much discussion as would have been desirable to have brought out the better points of the military proposal.

I was very much disappointed by the replies given by General Besson to the effect that (1) weight was not a problem but merely vertical clearance, (2) the proposal was confined only to the revision of design of the future bridges, and (3) high vehicles could "work their way around" limiting facilities already completed on the Interstate System. I was also disappointed in the diagram of the cross section of the vehicle supplied by Mr. Chacey which showed a 12-foot circular object mounted on a trailer body 4 feet from the ground. Also Chacey's reference to the 9-foot dimension as a feasible maximum size for units broken down for transportation. These points were particularly disturbing to me because I had made the effort earlier in the week to visit Mr. Chacey to review with him his presentation, and failing in that, met with Colonel McCauley for the same purpose. At that time I was not even shown the diagram Chacey presented at the meeting showing the 12-foot circular object on the 4-foot truck body, nor had any prior mention been made of the 9-foot unit for transportability.

On June 2 I told Chacey by telephone that I had felt quite let down by the presentation made and suggested that we get together for a postmortem discussion of the problem. On June 4 Mr. Chacey visited me and over a period of several hours we discussed the problem from many different angles during which I was able to give Mr. Chacey a detailed understanding of our reaction to the presentation and the problems created by the answers given by General Besson and by Mr. Chacey's diagram.

First, with respect to General Besson's statement that weight was not a problem I reminded Chacey of our telephone conversation back in February (which I made a matter of record at that time). We discussed at that time the relatively few vertical clearance restrictions on existing transstate routes, in comparison with the great number of such vertical clearance restrictions occurring on toll roads and on the Interstate System, and I suggested to him that if the problem was simply one of moving a load 17 feet high it would be much cheaper to do this by modification of structures on the existing net. In February Mr. Chacey had objected to this kind of a solution on the basis that the vehicles would require H–20, S–16 bridge loadings, and that the cost

of modifying all bridges on the parallel primary routes to carry this weight, as well as to modify the vertical clearances to accommodate 17-foot vertical clearance would be as costly as modification of the Interstate System itself. We agreed at that time on the basis of the stronger bridges that would be required, and I had reported this to my superiors. I am sure that Mr. Chacey now understands the reaction we had at the meeting to General Besson's statement that weight would not be a problem.

With reference to General Besson's statement that only future bridges would be involved and the high vehicles could work their way around existing structures I showed Mr. Chacey copies of the maps appearing in the Bureau's progress report on the Federal-aid highway program, copies of which I had sent him promptly upon its release. I told him that this was the picture of progress and development of the Interstate System that our people had in mind when listening to General Besson's statement. It was this picture that I had in mind when during the meeting with General Besson I spoke up to say that such a plan would be impractical. I told Mr. Chacey he should not expect Mr. Tallamy to go before the Secretary of Commerce, or the President, or the Congress in support of the proposal made by the Department of Defense unless a solution was offered for treatment of the entire system. He could not go up in other words to "bake half a loaf." He would certainly be questioned by any committee as to how we proposed to treat or bypass existing structures.

With respect to Mr. Chacey's diagram of a 12-foot circle and a 4-foot height of body vehicle I complained that I had not been shown that diagram during the week prior to the meeting. Had it been shown to me, I would have been in a position to advise them to revise it to make their presentation more effective. I reminded him of Mr. Tallamy's reaction in March to the picture of the Atlas transporter at which time Mr. Tallamy asked if the vehicle could not be redesigned so that the load could be carried closer to the level of the pavement and permit its movement through structures having lower vertical clearances. We had asked the Department of Defense at that time if they could redesign the vehicle and we are still waiting an answer to this question. I did tell him that on the basis of the study given by this office in March we had assured Mr. Tallamy that the problem was not one of moving the Atlas missile but one of moving future missiles on transporters most efficiently designed for the purpose. I told Mr. Chacey I had never before heard any reference to the 9-foot dimension as the optimum size of unit to which the larger loads could be broken down. While I understood there was a problem with solid propellant missiles in keeping their temperature constant and in cushioning them, I was very much surprised to hear any reference to a unit as small as 9 feet and told him we could not advocate 17-foot vertical clearances unless it could be demonstrated that the size of the units to which large missiles could be broken down absolutely required such a clearance when moved on efficiently designed transporters.

During our meeting on June 4 Mr. Chacey inquired as to what I thought should be the next step and I reminded him of Mr. Tallamy's suggestion that the Department of Defense develop more supporting information and make that information the subject of another meeting on this subject in preference to any exchange of correspondence on the matter. Mr. Chacey told me that subsequent to the May 29 meeting General Besson had asked him to develop two items; first a map of the State of California showing the vertical clearance problem on existing highways and on the proposed freeway system, and second, an example of the problems involved in transporting a vehicle for some distance over a route where it may be necessary at points to work its way around structures having limited vertical clearance. With reference to General Besson's first request I showed Mr. Chacey the diagrams of Indiana, Ohio, and Pennsylvania which we had worked up in February and which I had described to him by telephone and more recently shown to Colonel McCauley just prior to the meeting last week. I told him we had developed this information on the basis of the bridge data forwarded for routes of military significance, copies of which were in his office. We both felt that it would be best if Mr. Chacey would develop from that source the first item of information desired by General Besson. Mr. Chacey had in mind developing it for both the State of California and Ohio. Discussion of the second item revived discussion that I had with Mr. Chacey in December 1958, where I suggested to him that as soon as they developed the configuration for the transporter for the Minuteman missile that we would be glad to make a national study of its mobility to assist them in planning their installations. We have not yet received that but will be willing to make a national study as soon

VERTICAL CLEARANCE FOR NATIONAL SYSTEM OF INTERSTATE & DEFENSE HIGHWAYS

as it is available. To meet General Besson's request for the second item of information however, we thought it would be best if Mr. Chacey would develop configuration for a hypothetical vehicle, well designed and requiring a clearance of 17 feet if they still feel this is the optimum size of vehicle for missile transportability and request us to check on the kind of a problem that would exist in attempting to move it between specific points representative of the general problem of moving such a vehicle. We could have our division engineers make a study of a particular movement of such a hypothetical vehicle in the same manner as we have made regular studies for long-distance movements of other unusual vehicles which the Department of Defense has previously wanted to move. Mr. Chacey agreed to furnish us with the configuration of such a vehicle and its turning radius, etc., and we would find out whether it could be moved, and just what would be involved in "working our way around" existing limiting bridges.

As a result of our meeting I feel that Mr. Chacey now has a full appreciation of the problem which confronts us jointly if we are to accomplish any change in vertical clearance requirements to meet military needs.

Mr. MAY. What is the number?

Mrs. KEENEY. Twenty-three.

Mr. MAY. Mr. Siegle, I will quote from that memorandum. You follow me to be sure that I am accurate. If you have any other comments we will hear them.

The memorandum says:

Unfortunately other commitments by Mr. Tallamy and General Besson made it necessary to condense this meeting to a point which would not allow as much discussion as would have been desirable to have brought out the better points of the military proposal.

I was very much disappointed by the replies given by General Besson to the effect that (1) weight was not a problem but merely vertical clearance, (2) the proposal was confined only to the revision of design of the future bridges and (3) high vehicles could "work their way around" limiting facilities already completed on the Interstate System. I was also disappointed in the diagram of the cross section of the vehicle supplied by Mr. Chacey which showed a 12-foot circular object mounted on a trailer body 4 feet from the ground. Also Chacey's reference to the 9-foot dimension as a feasible maximum size for units broken down for transportation.

Paragraph 3 there states, and I quote:

On June 2, I told Chacey by telephone that I had felt quite let down by the presentation made and suggested that we get together for a postmortem discussion of the problem. On June 4 Mr. Chacey visited me and over a period of several hours we discussed the problem from many different angles during which I was able to give Mr. Chacey a detailed understanding of our reaction to the presentation and the problems created by the answers given by General Besson and by Mr. Chacey's diagram.

On page 2, paragraph 2, I quote:

With reference to General Besson's statement that only future bridges would be involved and the high vehicles could work their way around existing structures I showed Mr. Chacey copies of the maps appearing in the Bureau's progress report on the Federal-aid highway program, copies of which I had sent him promptly upon its release. I told him that this was the picture of progress and development of the Interstate System that our people had in mind when listening to General Besson's statement. It was this picture that I had in mind when during the meeting with General Besson I spoke up to say that such a plan would be impractical. I told Mr. Chacey he should not expect Mr. Tallamy to go before the Secretary of Commerce, or the President, or the Congress in support of the proposal made by the Department of Defense unless a solution was offered for treatment of the entire system. He could not go up in other words to "bake half a loaf." He would certainly be questioned by any committee as to how we proposed to treat or bypass existing structures.

Do you have any other comments, Mr. Siegle?

Mr. SIEGLE. I have no comment at this time.

Mr. MAY. Mr. Siegle, did you, due to the lack of time at that May 29th meeting, feel reluctant to interject yourself into the discussion?

Mr. SIEGLE. I think if the meeting had lasted for a longer period, perhaps I would have made comments more than I was able to in this period.

Mr. MAY. Mr. Chacey, due to the lack of time, did you feel reluctant to interject yourself into the discussion?

Mr. CHACEY. I think that it had an influence on the extent to which I interjected myself into the discussion.

Mr. MAY. Is my statement correct, Mr. Chacey, that people like yourself and Mr. Siegle, who had been working with this problem and knew all of its ramifications, due to the lack of time, did not interject yourself into the discussion and Mr. Tallamy and General Besson, who were not as fully aware of all the ramifications, discussed the problem for some 30 or 45 minutes?

Mr. CHACEY. In large part it was a discussion between General Besson and Mr. Tallamy.

Mr. MAY. Is that true, Mr. Siegle?

Mr. SIEGLE. Yes.

Mr. MAY. What was the outcome, Mr. Siegle, of this meeting between General Besson and Mr. Tallamy?

Mr. SIEGLE. I think that this might be answered by reading further from the memorandum:

> During our meeting on June 4th, Mr. Chacey inquired as to what I thought should be the next step and I reminded him of Mr. Tallamy's suggestion that the Department of Defense develop more supporting information and make that information the subject of another meeting on this subject * * *.

Mr. MAY. Mr. Chacey, after this particular meeting, what were your instructions? What instructions did you receive?

Mr. CHACEY. General Besson requested that I prepare an appropriate letter to General Schriever, Chief of Research and Development, Department of the Air Force, and also a letter to General Medaris, who is Commanding General, Army Ordnance Missile Command.

He also requested that we expand the information on the California map that we had used to illustrate the effect of construction of freeways supplementing the Interstate System on the movement of oversize items and to show this California freeway system on a map along with the Interstate System.

He also suggested that we discuss with the Bureau of Public Roads and develop with them proposed movements from origin to destination to illustrate some of the problems that would be encountered in various areas of the country.

Generally speaking, those were the two or three things that General Besson requested me to do.

I have a memorandum for the record here on this which I am sure you have.

Mr. MAY. Mr. Chacey, we will discuss this further when we reconvene.

Mr. BLATNIK. If there are no further questions, we are approaching the terminal point and it has been perhaps a tedious but a very

necessary record leading up to the requests made by the Department of Defense in October of 1959 and the AASHO conference in Boston.

There being no further questions, the hearing is adjourned for today. We will resume on Tuesday morning, 10 o'clock, on February 16.

(Thereupon, at 1:45 p.m., the subcommittee was adjourned, to reconvene at 10 a.m., Tuesday, February 16, 1960.)

DEFENSE HIGHWAY NEEDS

TUESDAY, FEBRUARY 16, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE OF PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to adjournment, at 10 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommitte) presiding.

Present: Representatives Blatnik, Baldwin, Brown, Cook, Fallon, Gray, Johnson, Jones, Kluczynski, Mumma, Robison, Scherer, Smith, and Wright.

Also present: Walter R. May, chief counsel; John P. Constandy, associate counsel; George H. Martin, administrative assistant, and Kathryn M. Keeney, subcommittee clerk.

Mr. BLATNIK. The Special Subcommittee of the Federal-Aid Highway Program will please come in session and we will continue the public hearing.

The Chair will make two brief announcements. The first order of business when the House convenes at 12 noon today will be the resolution for the appropriation for the committee, which will be submitted by the House administration. The Chair would like to have, if at all possible, as many of the members of the committee on the floor as possible which will make it necessary for the hearings to recess before 12, or shortly after the prewarning bell rings.

No. 2, we are just a little behind in our hearings. The first 2 days, of course, understandably, were somewhat detailed and perhaps somewhat tedious, but it was necessary to get into the record the many detailed steps taken in trying to promote the formulation of the matter which is before the committee, that is, the adequacy of clearances of overpasses to meet primarily defense needs, that is, the Department of Defense.

We may proceed somewhat as we originally agreed, to allow the witness before us to state his case, and then in orderly procedure, we will go down and allow each member of the committee an opportunity to interrogate. The Chair would appreciate that and thinks we will cover ground faster. Many times we ask questions in the early part of testimony that are later answered by the witness himself. This will give us a more complete statement of the case from each prospective witness.

Mr. SCHERER. Mr. Chairman, I agree with that general procedure, but sometimes witnesses are testifying and there is a specific point one

would like to make in connection with the immediate testimony that is lost if we wait until the end of his testimony.

Mr. BLATNIK. That is correct and the Chair recognizes that and that was made clear in our agreement that there will arise points where, at the moment, a clarification is essential and very proper, so we will not have a rigid rule, but I don't want it to develop that we have a wholesale interrogation and a yielding of one member to the other and begin to meander around somewhat. The chairman agrees there will be instances where members will have properly to ask that they be allowed to ask a question to clarify the point of the moment.

We may proceed with the witnesses. As the first witness this morning, we are very pleased and privileged to have a man who is well known to the committee and to the Chair, known throughout the United States here for his outstanding leadership, known in his own State, and by his own organization, the State highway officials. We call to the chair, Mr. David H. Stevens, the chairman of the Maine State Highway Commission, and president of the American Association of State Highway Officials.

Mr. Stevens, we appreciate the cooperation you have given us all the way through in our preliminary inquiry into this whole area.

Let the record show that you were present on the initial 2 days of the hearings, that you have kindly consented, because of the holiday of last week which upset our schedule already arranged, to accommodate us by making a special trip to be back with us this morning.

Mr. STEVENS. Thank you.

Mr. BLATNIK. We welcome you and thank you.

Mr. STEVENS. I am glad to do it.

STATEMENT OF DAVID H. STEVENS, PRESIDENT, AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, AND CHAIRMAN, MAINE STATE HIGHWAY COMMISSION

Mr. BLATNIK. Mr. Stevens, do you have a prepared statement with you?

Mr. STEVENS. No, sir, Mr. Chairman.

Mr. BLATNIK. It is obvious that the man knows the material and we may proceed with the interrogation.

Mr. May, will you proceed?

Mr. MAY. Mr. Stevens, to expedite matters somewhat, we might refer to the American Association of State Highway Officials from here on as AASHO.

Mr. Stevens, what action did AASHO take leading to the adoption of the geometric and construction standards in 1956?

Mr. STEVENS. Mr. Chairman, members of the committee, Mr. Counsel, in previous testimony before the committee, reference has been made to section 108, paragraph (I) of the 1956 Federal-Aid Highway Act. In that paragraph we have the following, referring to the standards for the Interstate System:

> Such standards shall be adopted by the Secretary of Commerce in cooperation with State highway departments as soon as practicable after the enactment of this act.

Now, the act itself, as has been testified to here, was adopted June 29, 1956. The American Association of Highway Officials, and I ap-

preciate your allowing us to call it AASHO, that is the common name, called a special meeting of its chief administrative officers in Chicago on July 12, 1956, approximately 2 weeks after adoption of the act. It required that length of time in order to notify the chief administrative officers who come from all over the United States to assemble in Chicago for this meeting.

At this meeting in Chicago, the chief administrative officers, speaking for the States, did approve minimum standards for the construction of the Interstate System in accordance with the 1956 Federal Highway Act. These minimum standards had been considered and studied by our Committee on Design and Planning Policies over a period of several years prior to this meeting. The action of the chief administrative officers was transmitted to the Secretary of Commerce and he in turn adopted the standards as suggested and recommended on July 17, 1956.

I would like to add at this time, Mr. Chairman, and members of the committee, that this committee which has developed these standards is 1 of 20 committees which AASHO has working on standards for highway construction maintenance on a continuing basis, recognizing that these matters will not remain static, and these design committees and other committees are made up of the leading authorities from the member highway departments of AASHO throughout the country.

The Secretary in almost every case comes from the Bureau of Public Roads which is a member of AASHO.

Mr. MAY. Mr. Stevens, at that time, the standards were adopted and among the standards there was the minimum standard of 14 feet vertical clearance. Do I understand that some States had a standard difference of 14 feet and continued to do so after the adoption of these standards?

Mr. STEVENS. That is correct, Mr. Counsel. As a matter of fact, the standard of 14 feet had applied to primary and other Federal systems and systems of the State highways over a period of years.

Mr. SCHERER. Would you talk a little louder, Mr. Stevens?

Mr. MAY. Would you explain to the subcommittee why some States would build at something other than 14 feet? Some States build at 15, I understand, some at 16. Why would the States do that?

Mr. STEVENS. These standards, which were and had been in effect, are minimum standards for clearance and AASHO did not attempt to dictate to the States administrative functions in regard to these standards, and many States have over the years determined that clearances other than 14 feet are required for special purposes in those States. For instance, we have a sister State in New England which has a clearance of 16 feet and they have determined that is necessary because they have many vehicles transporting logs which have heights above the normal. Some States have oil equipment that they have to transport and this equipment is used in the oilfields. Probably one of the fundamental reasons for higher clearances is the desire on the part of the State highway departments to prevent damage to overhead structures by reason of loads shifting or higher loads than normal.

Mr. MAY. I understand that in some States where the legal vehicle height would be, say, 12 feet, 6 inches, and the standard minimum standard would be 14 feet, there is an allowance of a foot and a half.

For what particular purpose is this, Mr. Stevens?

Mr. STEVENS. The allowance is made because it is recognized that loads frequently will extend above the legal height of the vehicle, 12½ feet, 12½ feet being the usual height of the vehicle and would be for the purpose, as I said before, to prevent damage of the structure where we have overhead structures.

Mr. MAY. You mentioned New Hampshire earlier having 16-foot clearance. Perhaps mainly because of the transportation of logs, there has to be an allowance made to allow for the shifting of the load; is that true?

Mr. STEVENS. It could be possible.

Mr. MAY. Mr. Stevens, when did AASHO become aware that the Department of Defense considered the 14-foot minimum vertical clearance standard a problem?

Mr. STEVENS. I understand that we were unofficially aware of some concern on the Defense Department's part in the latter part of 1958.

As a matter of fact, at the annual meeting of the executive committee of AASHO, which took place in the latter part of 1958 in San Francisco, this item was mentioned very briefly during the discussions before the committee.

No action was taken because we did not have any information which would warrant such action. Later on in 1959, Mr. R. R. Bartelsmeyer, who was then president of this association, appeared before the Subcommittee on Roads of the Public Works Committee of the House, and he appeared before that committee on May 6, 1959.

During the course of his statements, Congressman Blatnik, who was the chairman of this subcommittee, asked Mr. Bartelsmeyer if he had any idea as to the cost of the Interstate System which would be directly related to Defense Department requirements.

Mr. Bartelsmeyer could not answer the question at that time but did file with that subcommittee on May 18, 1959, a statement in which he did comment, among other things, on the matter of increased vertical clearances on interstate routes and did state that AASHO had some knowledge, unofficial to be sure, that there was some agitation for a minimum clearance for more than 14 feet.

In fact, the statement indicates consideration might be given to a 17-foot clearance.

Mr. MAY. Would you read what Mr. Bartelsmeyer had to say at that time?

Mr. STEVENS. This is item 4 of the statement and there is a subheading, "Increased vertical clearances on interstate routes."

Mr. MAY. This statement was made on what date?

Mr. STEVENS. This statement was filed with the committee, the Subcommittee on Roads, on May 18, 1959. It did not become a part of the record.

Mr. SCHERER. May 18, 1959, a statement was filed with the subcommittee of the Public Works Committee?

Mr. STEVENS. That is correct, sir.

Mr. BLATNIK. That was the reply, Mr. Scherer, to the question I raised, what part of the cost of the Interstate System would be wholly or in part, as I recall, attributed to the design or engineering requirements necessary to meet whatever requirements were peculiar or necessary for defense needs, essentially defense needs.

He did not have the answer at the time. He said he would have it worked up, which he did, and this is the statement to which they are referring. Mr. Stevens?

Mr. STEVENS. This is a statement by Mr. Bartelsmeyer.

Mr. SCHERER. You say this was before the appointment of this special investigating committee?

Mr. BLATNIK. Oh, yes, sir; hearings before our regular subcommittee last spring.

Mr. SCHERER. And it was filed with the committee then?

Mr. STEVENS. On May 18, 1959.

Mr. Bartelsmeyer was appearing before the subcommittee on roads and appeared on May 6, 1959, to testify on H.R. 5950, introduced by Chairman George Fallon.

Mr. MAY. Would you read what Mr. Bartelsmeyer had to say about vertical clearance problems?

Mr. STEVENS (reading):

We have heard some discussion, unofficially, as to the probable desirability of increasing vertical clearances on the Interstate System above the 14-foot provision as contained in the official interstate design standards that were developed jointly by the State highway departments and the Bureau of Public Roads in 1956, in compliance with the law.

Since the time interstate design standards were promulgated, there has been unprecedented development in the field of weaponry, and mobile defense concepts. It is our understanding that within the past 3 years, missile development is now going in to the third generation, and sizes have been developed that make it necessary to move some equipment by highway.

There has been some discussion, unofficially, that vertical clearances between the roadway elevation and overhead bridges on the Interstate System will have to be in magnitude of 17 feet instead of 14 feet in order that missiles might be transported by highway vehicles. The Interstate System, of course, is to be of controlled access expressway design, and these features require no crossings at grade, so therefore a multiplicity of overhead structures are involved.

In case the Nation might need the additional vertical clearances for its protection, and they were not provided, then a system of interstate highways that would be ultramodern for civilian needs might suddenly be obsolete for defense needs.

These high vertical clearances would not affect the entire mileage of the Interstate System, as it is our understanding that the major portion of the urban interstate networks, other than the circumferential routes, would not require additional clearances. Of course, if they are needed, all rural sections of the Interstate System would have to be provided with the possible 17-foot clearance requirement.

At the present time and until we are approached officially on the matter, and until we know that additional clearances might be required, we are not in a position to make an accurate estimate as to what the additional cost might be for higher clearances, and possibly we might find that the increased clearances might be justified from the viewpoint of civilian economy.

This, of course, is dependent upon the answers we get out of the AASHO test road project and related data. It is possible, however, that any increased cost resulting from higher clearances probably will not be a major item percentagewise, when compared to the total cost of the Interstate System, but we do need to know if the clearances are to be increased before we get much further along with designs and construction.

Inasmuch as the estimate for the total of bridge structures on the Interstate System is 30 percent of the total construction cost for the system, and since only those separation structures over the main roadways of the rural and urban circumferential interstate routes are involved, except for those major bridges of the through-truss type where portal bracing clearances have to be increased to 17 feet, it appears that the cost of increasing highway clearances as outlined from 14 feet to 17 feet would amount to only a small fraction of the total 30 percent of the cost of the Interstate System that is reflected in bridges.

Mr. MAY. Mr. Chairman, may we consider inserting this in our record at this point, since it never did appear in the report of the other subcommittee?

Mr. BLATNIK. The supplemental statement of Mr. R. R. Bartelsmeyer at that time, president of AASHO, will be included in the record at this point.

Mr. SCHERER. Could I see it first?

Mr. MAY. That was in May 1959, Mr. Stevens. Did any other significant events take place in relation to this problem thereafter?

Mr. SCHERER. Excuse me, Mr. Chairman. I still have not straightened out in my own mind how this supplementary statement arose. Was it when Mr. Bartelsmeyer was on the stand testifying that he was asked about this?

Mr. BLATNIK. I asked the question to which he did not as of that moment have the answer. He asked for an opportunity to look further into the matter and would present what information he did have for the committee's files. That is the supplementary statement filed in response to a question I raised at the time of the hearing before the Public Roads Subcommittee of this committee.

The date was approximately early May?

Mr. STEVENS. May 6, sir.

Mr. BLATNIK. 1959.

Mr. SCHERER. And then this was submitted to the Public Works Committee here for the records in compliance with Mr. Blatnik's request?

Mr. STEVENS. Yes, sir; submitted on May 18, 1959. I think, Congressman, if you will read the first two paragraphs of the front page of the statement, it might be explanatory.

Mr. SCHERER. Did it arrive too late, then, Mr. Chairman, to have it incorporated in the printed hearings?

Mr. BLATNIK. I am not familiar with the technical things, but I did ask for the information, the information was submitted in writing, and that is the information which you are looking at and that was in our committee files.

Mr. MAY. Could we make that an exhibit?

That will be exhibit what?

Miss KEENEY. Twenty-four.

(Exhibit 24 follows:)

EXHIBIT 24

MAY 18, 1959.

SUPPLEMENTAL STATEMENT OF R. R. BARTELSMEYER, PRESIDENT OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS BEFORE THE PUBLIC WORKS COMMITTEE OF THE HOUSE OF REPRESENTATIVES ON DEFENSE REQUIREMENTS INCORPORATED IN THE INTERSTATE SYSTEM

Gentlemen of the committee, at the time I was privileged to appear before you on May 6, 1959, and testify on H.R. 5950, introduced by Chairman George Fallon, and on the status of the Federal-aid road program, we were requested by Representative Blatnik of your committee to set out such items of cost of the National System of Interstate and Defense Highways that are chargeable to national defense.

We promised to furnish such information if it were available and assessable.

We presume that at the time the cost allocation study requested by section 210 of the Federal-Aid Highway Act of 1956 is submitted to the Congress by the Department of Commerce in 1961, that all beneficiaries from the highway program will be spelled out in detail and that if possible, a monetary value may

be placed upon that portion of the Interstate Highway System that is demanded solely by and chargeable directly to defense.

At the present time, however, we submit the following, based on the best information that we have available to us:

1. Bridge structure design requirements

On certain bridges of the spans from approximately 15 to 40 feet in length or on more complex bridge structures where the floor system is supported on stringers of the above lengths, the highway department checks stresses that would be induced by two 24,000-pound axle loads spaced 4 feet apart, and if this loading creates stresses in the floor or in the floor system of the structure in excess of those developed from applying the standard H–20—S–16 bridge loading, the floor or floor system is designed for the heavier loading.

This concession primarily is for defense loads, however we are not able to say at this time that it might not be indicated for commercial vehicle loadings by the time we make a complete analysis of the results of the AASHO test road research project, where we expect to determine what loads give the public the optimum balance between the best highway use and the maximum highway life.

It appears from the best estimates that we have available at this time that the cost of any additional construction required from the above heavier axle loading, amounts to only a small fraction of 1 percent of the cost of building the Interstate System.

2. Roadway design requirements

It is our understanding that it has been the transportation policy of the Department of Defense since early in the 1920's to so design their vehicles that they will be compatible with and integrate into highway networks that are designed for civilian and commercial requirements.

It is our understanding that this is done so as not to limit the mobility of military vehicles to a limited network of roads, either in this country or abroad.

From the best information that we have now, it is our understanding that defense vehicles are being designed with tire sizes, tire pressures, springing, axle spacings, and wheel spacings in such a manner that they will not exceed the roadway design requirements of normal commercial traffic.

We will undoubtedly have more subject on this matter, also at the time that we complete the AASHO test road project.

Also, please bear in mind that in many instances it is indeed difficult to differentiate between commercial truck transport and military transport for, in a great many instances, the materials and components going into military manufacture are transported regularly on the public highways in commercial vehicles.

3. Urban circumferential route additions

It is our understanding that at the time additional routes were being officially designated as part of the official Interstate System in 1957, that certain suggestions from the Department of Defense were considered by the Department of Commerce in making the designations. This is particularly true for the additions of some circumferential routes for some of the larger urban areas that originally did not include a circumferential routing in their proposed interstate network.

It is our further understanding that these circumferentials were suggested by the military to transport men and materiel in case of a national emergency and keep the traffic out of downtown sections of interstate expressways, where the highway might be easily blocked or serious traffic congestion occur.

It appears that these added circumferential routes can be fully justified from the viewpoint of the civilian economy, when one analyzes the future civilian traffic projection that will likely use the route, and which traffic is on the basis for the development of the geometric design of these routes. If the Interstate System were located from the military viewpoint, it is highly probable the routings would miss urban centers by some 10 to 20 miles.

4. Increased vertical clearances on interstate routes

We have heard some discussion, unofficially, as to the probable desirability of increasing vertical clearances on the Interstate System above the 14-foot provision as contained in the official interstate design standards that were developed jointly by the State highway departments and the Bureau of Public Roads in 1956, in compliance with law.

Since the time the interstate design standards were promulgated, there has been unprecedented development in the field of weaponry, and mobile defense

concepts. It is our understanding that within the past 3 years, missile development is now going into the third generation, and sizes have been developed that make it necessary to move some equipment by highway.

There has been some discussion, unofficially, that vertical clearances between the roadway elevation and overhead bridges on the Interstate System will have to be in the magnitude of 17 feet instead of 14 feet in order that missiles might be transported by highway vehicles. The Interstate System, of course, is to be of controlled access, expressway design, and these features require no crossings at grade, so therefore a multiplicity of overhead structures are involved.

In case the Nation might need the additional vertical clearances for its protection, and they were not provided, then a system of interstate highways that would be ultramodern for civilian needs might suddenly be obsolete for defense needs.

These high vertical clearances would not affect the entire mileage of the Interstate System, as it is our understanding that the major portion of the urban interstate networks, other than the circumferential routes, would not require the additional clearances. Of course, if they are needed, all rural sections of the Interstate System would have to be provided with the possible 17-foot clearance requirement.

At the present time and until we are approached officially on the matter, and until we know what additional clearances might be required, we are not in a position to make an accurate estimate as to what the additional cost might be for these higher clearances, and possibly we might find that the increased clearances might be justified from the viewpoint of the civilian economy. This, of course, is dependent upon the answers we get out of the AASHO test road project and related data. It is possible, however, that any increased cost resulting from higher clearances probably will not be a major item percentagewise, when compared to the total cost of the Interstate System, but we do need to know if the clearances are to be increased before we get much further along with designs and construction.

Inasmuch as the estimate for the total of all bridge structures on the Interstate System is 30 percent of the total construction cost for the system, and since only those separation structures over the main roadways of the rural and urban circumferential interstate routes are involved, except for those major bridges of the through-truss type where portal bracing clearance would have to be increased to 17 feet, it appears that the cost of increasing highway clearances as outlined, from 14 to 17 feet, would amount to only a small fraction of the total 30 percent of the cost of the interstate that is reflected in bridges.

In conclusion, we are unable to point definitely, at this time, to any sizable costs in building the Interstate System of Highways that are chargeable directly and solely to national defense.

Respectfully submitted.

R. R. BARTELSMEYER, *President, AASHO.*

Mr. MAY. What significant events took place thereafter, Mr. Stevens?

Mr. STEVENS. On June 11, 1959, AASHO had its annual summer meeting of the executive committee that took place in Chicago. Included on the agenda for that meeting was an item in regard to minimum vertical clearances of structures on the Interstate System.

At that time, Mr. B. D. Tallamy, Federal Highway Administrator, who represents the Federal Bureau of Public Roads in AASHO, and who was a member of the executive committee, indicated that he had asked the Defense Department for additional justification in regard to the possible increase of minimum vertical clearances to 17 feet. No action was taken by AASHO at that meeting.

On October 10, 1959, at Boston, at the annual meeting of the executive committee of AASHO, which takes place 2 days prior to the annual convention of AASHO each year, the matter of minimum vertical clearances was again discussed by the executive committee.

At that time, Mr. Tallamy made a request to the executive committee that he consider increasing the minimum vertical clearances on

structures in the Interstate System from 14 to 17 feet, indicating to the committee that the Defense Department had so requested such increases through the Bureau of Public Roads.

Mr. MAY. What action did the executive committee take at that time?

Mr. STEVENS. The executive committee voted unanimously to recommend to the chief administrative officers meeting the next day, to the chief administrative officers of AASHO, that the clearances be increased from 14 to 17 feet. That is reflected by the following which is an excerpt from the minutes of the executive committee meeting at Boston on October 10, 1959, on the subject of the 17-foot clearance request in the Interstate System.

This is the excerpt——

Mr. MAY. Mr. Stevens, could we hold that just a moment? We will quote the excerpt in a letter in just a moment. Who were the members of the administrative committee?

Mr. STEVENS. You are referring, Mr. Counsel, to the executive committee of AASHO?

Mr. MAY. Who makes up the executive committee?

Mr. STEVENS. The executive committee of AASHO consists of the president, vice president, and regional vice president from four different regions and also certain members elected at large consisting entirely of 20 members, including a representative from the Bureau of Public Roads.

Mr. MAY. They approved this proposal and submitted it to the administrative committee?

Mr. STEVENS. They did, sir.

Mr. MAY. Who were the members of the administrative committee?

Mr. STEVENS. The members of the administrative committee are the chief administrative officers of the member highway departments of AASHO; in other words, a representative from each of the now 50 States, District of Columbia, Bureau of Public Roads, and Puerto Rico.

Mr. MAY. So at that point, the proposal to raise the standard to 17 feet was submitted to representatives of all the States?

Mr. STEVENS. October 11 was the date following the meeting of the executive committee.

Mr. JONES. Mr. Chairman, may I ask a question?

Mr. BLATNIK. Mr. Jones?

Mr. JONES. Mr. Stevens, in the AASHO meeting, was there ever a representative of the Department of Defense that engaged in a discussion of the defense requirement as it related to the vertical height of bridges?

Mr. STEVENS. There was no representative from the Defense Department at the meeting of the executive committee.

Mr. JONES. Was there any request by AASHO to the Department of Defense to present their views or discuss the matter?

Mr. STEVENS. There was no request from AASHO to the Defense Department.

Mr. JONES. All the negotiations as far as the points that you have had under discussion today in the relationship between AASHO and Department of Defense was carried on through the Bureau of Public Roads?

Mr. STEVENS. That is correct, sir.

Mr. SCHERER. Were you supplied at that time with the reports of the Department of Defense, the findings of the Department of Defense?

Mr. STEVENS. Mr. Tallamy did have with him a letter dated October 1, 1959, this letter being addressed to him as Federal Highway Administrator, written by General Besson of the Defense Department, setting forth the request for 17-foot minimum clearance and the reasons why that clearance should be approved.

Mr. SCHERER. Then when AASHO acted at its convention in October it was aware of the fact that the Department of Defense at that time had requested a 17-foot clearance, and the reason therefor?

Mr. STEVENS. That is correct.

Mr. SCHERER. That information was passed on to you and your executive committee by the Highway Administrator?

Mr. STEVENS. That is correct, sir.

Mr. MAY. What action did the administrative committee take?

Mr. STEVENS. The administrative committee voted unanimously to recommend to the Secretary of Commerce that the clearances be increased, minimum clearance be increased from 14 to 17 feet. All of the States were represented except three and those three were absent at the time the rollcall was taken.

Mr. MAY. Mr. Stevens, I have here a letter. Would you identify it, please?

Mr. STEVENS. This is a letter under date of October 23, 1959, written to Hon. B. D. Tallamy, Federal Highway Administrator, by Mr. A. E. Johnson, executive secretary of AASHO.

Mr. BLATNIK. Without objection, the letter will be exhibit 25 at this point in the record.

Mr. MAY. Would you read that letter into the record, Mr. Stevens?

Mr. STEVENS. Yes [reading]:

EXHIBIT 25

Hon. B. D. TALLAMY,
Federal Highway Administrator,
Washington, D.C.

MY DEAR MR. TALLAMY: The executive committee on October 10, 1959, at the recent Boston annual meeting of the American Association of State Highway Officials, acted unanimously to recommend that chief administrative officers in meeting on October 11, 1959, act favorably on the following:

"In order to meet the revised policy of the Department of Defense and its recent request for a change in the design standards relative to vertical clearance of overhead structures on the National System of Interstate and Defense Highways, all future projects, including those on which the design can be altered without excessive cost or delay, the minimum net vertical clearance, after any subsequent pavement resurfacing shall be 17 feet, zero inches, over the entire roadway width, including the usable width of shoulders.

"This policy shall apply to all rural interstate highways. In urban areas, this policy shall apply to one route, preferably a belt route, selected with the approval of the Bureau of Public Roads, so as to most economically connect the rural sections of the interstate and defense highway routes."

Forty-five State highway departments and the District of Columbia Highway Department officially voted for the proposal. As per policy the Bureau of Public Roads did not vote, nor did Puerto Rico which has no Interstate System routes. Neither does Hawaii, but that State asked to be recorded as voting in favor of the proposal. No State present voted against it; however, when the vote was taken representatives were not in the meeting from Alabama, Montana, Nevada, and Oregon.

Since over two-thirds of the member departments voted in favor, we now officially submit the proposed change in the official geometric design standards for the National System of Interstate and Defense Highways for the approval of the Secretary of Commerce, in accordance with section 108(i) of the Federal Aid Highway Act of 1956, Public Law 627, 84th Congress.

Yours truly,

A. E. JOHNSON, *Executive Secretary.*

Mr. MAY. You might notice that this letter speaks of future construction.

Mr. STEVENS. That is correct, sir.

Mr. MAY. And this official action on the part of AASHO took place less than 2 weeks after the Boston convention. Mr. Stevens, work relating to structures continues almost daily within the various State highway departments. Is that true?

Mr. STEVENS. That is correct.

Mr. MAY. What action did you take upon your return to Maine from the Boston convention?

Mr. STEVENS. In our State, which of course is a relatively small State from the standpoint of the overall interstate highway construction program, we had three bridges which were under consideration which we thought we should give consideration to in the matter of 17-foot clearance if and when it became official.

We had a conference of our people and decided that those three bridges should be redesigned to 17-foot clearance. We had been using 14 feet 6 inches in our State, and we asked the consulting engineers who were responsible for the design of these particular three structures to give us an estimate of the cost of making this design or redesign.

One of these bridges had been awarded to contract but no work had been started in the field. The other two were in the design stage. The consulting engineers gave us that estimate and we authorized them to redesign these three structures to provide for 17-foot minimum clearance.

Mr. MAY. Do you have available with you the cost of revising the plans from 14 feet to 17 feet?

Mr. STEVENS. Yes, sir; the actual cost as billed to us by the consultants who did the redesign work, in the case of one bridge, $398.44; the second bridge, $626.86; the third bridge, $533.48; an average of about $500 per bridge.

Mr. MAY. So any time the State highway department revises its plans up or down, it costs money. Mr. Stevens, at the request of the staff of this subcommittee, did the main office of AASHO forward to the various State highway departments a questionnaire?

Mr. STEVENS. We did.

Mr. MAY. When was that submitted to the States?

Mr. STEVENS. The letter was dated January 5, asking for telegraphic reply.

Mr. MAY. What questions were put to the State highway departments at that time?

Mr. STEVENS. The questionnaire which was enclosed with a letter read as follows:

American Association of State Highway Officials, vertical clearances over State highway, January 1, 1960——

Mr. SCHERER. What was the date of this inquiry, Mr. Stevens?

Mr. STEVENS. The questionnaire was dated January 1, 1960. The letter that was sent out——

Mr. MAY. Mr. Stevens, I think that letter was dated December 30?

Mr. STEVENS. Yes, sir; January 5, 1959.

Mr. MAY. 1960.

Mr. STEVENS. Obviously, the date is wrong on the letter. The letter which I referred to dated January 5, 1960, was a subsequent letter. It did not have anything to do with the questionnaire. The questionnaire was dated January 1, 1960.

Mr. SCHERER. Do I understand that was an AASHO questionnaire, or is that a questionnaire sent out by the Maine highway department?

Mr. STEVENS. This questionnaire which I am about to read, was sent out by the main office of AASHO at the request of the staff of this subcommittee. In other words, Mr. Johnson, Washington office.

Mr. SCHERER. I had "main" confused with "Maine."

Mr. STEVENS. Washington, D.C., office, Congressman.

Mr. MAY. What were the questions contained on that questionnaire, Mr. Stevens?

Mr. STEVENS. The questionnaire read as follows:

"American Association of State Highway Officials: Vertical Clearance of the State Highways, January 1, 1960.

"First question: What vertical clearance do you provide for currently (net after possible future resurfacing and in effect prior to Boston AASHO meeting." And the reply was requested in feet.

The second question: "What is your legal vehicle height?" Again the reply to the question was requested in feet.

No. 3: "Then, what net vertical clearance have you been providing Interstate since the Boston national meeting?" The answer being requested in feet.

No. 4: "Since the Boston national meeting, has your program been delayed due to the delay in formalizing an Interstate System vertical clearance?"

No. 5: "Has the Bureau of Public Roads allowed you to go ahead on 14 feet? 17 feet?

"If not, has the action been at division or regional level?"

No. 6: "How many existing overhead clearances do you have on the Interstate System on rural and outer circumferential routes that are less than 16 feet?"

"Return one of these and retain other for your files."

There is opportunity for the State to identify itself and the signature of the individual sending the material by title and date is provided for on the form.

Mr. SCHERER. Was any question asked as to how many bridges were built since the adoption of the 14-foot height as a result of the 1956 act? Was that question asked?

Mr. STEVENS. No, sir.

Mr. SCHERER. It seems to me to be the most important question that could have been asked. But, let's go ahead.

Mr. MAY. May I point out here that this last question relating to the number of existing overhead clearances on rural and urban circumferential routes that have less than 16 feet would be those structures involved in this problem. If a decision is made to raise all clearances, all affected structures to the new minimum standard of 16 feet——

Mr. SCHERER. Yes, sir; I think the thing I would want to know and the thing we have been driving at is how many have been built since the adoption of the geometric standards following the 1956 act? That would tell us how much our loss is.

Mr. MAY. Congressman, perhaps the representative of the Bureau of Public Roads whom we will hear later in the day may have some answer to those. Mr. Stevens, based on the answers by the States to this questionnaire, certain information was developed. Could you relate to the subcommittee some significant information?

Mr. STEVENS. The questionnaires indicated that there had been 3,964 structures built on the Interstate System on rural and circumferential routes with less than 16-foot overhead clearances according to replies received from 48 States involved.

Mr. MAY. That would be 3,964 structures on rural and urban circumferential routes with less than 16 feet according to the States?

Mr. STEVENS. That is correct; according to the results from the questionnaire.

Mr. SCHERER. Those structures may have been built any time between 1930 and the date that you submitted in the questionnaire?

Mr. STEVENS. That is correct, Congressman.

Mr. MAY. Would you go on, Mr. Stevens?

Mr. STEVENS. Five States—Alabama, Colorado, Maryland, New Hampshire, and Oklahoma—replied that the vertical clearance standard in their States prior to the AASHO meeting in mid-October 1959, had been 16 feet and that no structures had been built on the Interstate System on rural and urban circumferential routes with less than 16-foot overhead clearance.

Mr. MAY. I think later on, did not New Hampshire revise their figures somewhat and indicate that 17-foot structures now exist on the Interstate System in New Hampshire on rural and urban circumferential routes?

Mr. STEVENS. If they did so, I do not see it here on this report at this time.

Mr. MAY. I might comment, Mr. Chairman, we received later information from Mr. Johnson which indicated New Hampshire has 17 such structures. Would you go on, Mr. Stevens? We might point out there, and this becomes important, as of the time of this questionnaire five States said that they did have a 16-foot standard, just five, and that one more that we will speak of now—will you go on, Mr. Stevens?

Mr. STEVENS. One State, New Mexico, replied that vertical clearance standard in that State prior to the AASHO meeting had been 16 feet. However, New Mexico had built 10 structures on the Interstate System on rural and circumferential routes with less than 16-foot overhead clearance.

Mr. MAY. Now we have six States stating they had a 16-foot standard; however, two of those States do have structures of less than 16 feet on the affected portions of the Interstate System.

Mr. SCHERER. Built since when?

Mr. MAY. We don't know from this questionnaire.

Mr. STEVENS. Fourteen States replied they had been using a 15-foot standard prior to October 1959. Those States are as follows: California, Florida, Idaho, Kansas, Louisiana, Minnesota, Montana, Ne-

braska, Nevada, North Dakota, Ohio, Oregon, South Carolina, and Utah.

Mr. MAY. Fourteen States with a 15-foot standard. Would you go on?

Mr. STEVENS. One State, Georgia, replied it had been using 15¾-foot standard prior to October 1959. One State, Vermont, replied it had been using a 15-foot, 3-inch, standard prior to October 1959 and 26 States replied they had been using a standard between 14 feet and 14¾ feet prior to October 1959.

Mr. MAY. Would you name those States, those 26 States, please?

Mr. STEVENS. Arizona, Arkansas, Kentucky, Delaware, Illinois, Indiana, Iowa, Kentucky, Maine, Massachusetts, Michigan, Mississippi, Missouri, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Mr. MAY. I think there is one error; it was Arizona, Arkansas, and Connecticut. I think you said "Kentucky."

Mr. STEVENS. Sorry.

Mr. MAY. What did the States provide in the way of vertical clearance after the AASHO meeting in Boston in mid-October?

Mr. STEVENS. They reported that 20 of them used regular clearance, 16 used 17-foot clearance, although in that 16, one State, Florida, provided a 17-foot clearance on overhead sign structures only, not on bridge structures. Five reported using both clearances, regular and 17 feet, and eight reported they were unable to proceed with either regular clearances or 17-foot clearance.

Mr. MAY. After the Boston convention, 20 States used their regular clearance, 16 used 17-foot clearance, and we mentioned Florida used it on overhead sign structures only, 5 States used both the regular and the 17-foot clearance, 8 States were unable to proceed with the regular or 17-foot clearance.

Mr. BALDWIN. Could I ask a question just to be clear?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. What does it mean when you list, for example, the State of California "(b)" and just nothing, does that indicate they just never replied to indicate whether they were being allowed to go ahead at 17 feet or what happened in that State?

Mr. MAY. That is right, Congressman.

Mr. BALDWIN. How many States replied that their program had been delayed?

Mr. STEVENS. Twenty-one States indicated their program had been delayed. I think, however, when one speaks of delay in this respect, it is perhaps a relative thing and the questionnaire was not so worded that the word "delay" itself was defined and so consequently when 21 States indicated they were delayed, we had no knowledge as far as this questionnaire is concerned as to the extent of that delay in each of these States.

Mr. MAY. We do not know to what degree their program is delayed. Would you name the 21 States?

Mr. STEVENS. Alabama, Arkansas, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New Mexico, North Dakota, Ohio, Utah, Vermont, Virginia, and Wisconsin.

Mr. MAY. Now, when the States answered this questionnaire, some States volunteered some extra information. What did the State of Iowa report at that time?

Mr. STEVENS. They reported as follows, and this is an excerpt from the letter which was received by the AASHO-Washington office:

On October 28, we received a memorandum from the Bureau of Public Roads which advised us to immediately go to 17-foot vertical clearance. It further advised us to make changes in projects under contract to provide this 17-foot clearance.

A quotation from this memorandum follows—

this is a quotation:

"Examining the feasibility of undertaking such changes, full weight should be given to the fact that the correction will need to be made later unless included in the present construction."

The reply to the questionnaire went on further to say:

On the basis of this memorandum, we stopped several contractors from doing further work on the structures. We immediately started revision of all projects under contract in which construction had not progressed to such a point as to make changes impractical. Before these revisions had been completed we were advised by the Bureau of Public Roads that they could not approve such changes and structures should be constructed with 14-foot clearance. Too many changes had progressed to the point where it seemed more desirable to complete with 17-foot clearance. On these two structures, we have recently been advised the Bureau of Public Roads cannot approve on the basis of 17-foot clearance. We are presently redesigning these structures for 14-foot clearance. Much delay has been caused by the clearance question.

In further reply they said as follows:

We have 97 bridges presently constructed or under construction which were designed for 14-foot clearance. In addition, we have 15 structures on which design is complete but contracts have not been awarded providing only 14-foot clearance. We are currently preparing plans for 21 additional structures on the basis of the 14-foot clearance requirement.

Mr. MAY. I notice in Iowa's report, they pointed out that, after the AASHO convention in Boston, the Bureau of Public Roads directed them to take immediate action and go to a 17-foot clearance. And before the revisions could be made or had been completed, they were advised by the Bureau of Public Roads that they could not approve such changes and the structures should be constructed at a 14-foot clearance.

Later, on two structures, they were advised the Bureau of Public Roads could not approve the 17-foot clearance and they were redesigning the structures for a 14-foot clearance. What would the minimum vertical clearance be in Iowa today?

Mr. STEVENS. I expect it would be 16 feet, as per advice from the Bureau of Public Roads which we received in our State on February 8, 1960.

Mr. MAY. So they did have a 14-foot clearance, went to a 17-foot clearance, back to a 14-foot clearance and now they will have to redesign to a 16-foot clearance.

What did Montana have to say?

Mr. STEVENS. Prior to the questionnaire, Montana stated as follows:

After the Boston meeting, the regional office of the Bureau of Public Roads requested all plans for structures over the interstate be revised to provide for 17-foot vertical clearance including two structures already under contract.

Now neither division office or regional office of Bureau of Public Roads can approve structures over interstate to have more than a 15-foot vertical clearance.

Mr. WRIGHT. What was that last sentence? I did not understand.

Mr. STEVENS (reading).

Now neither the division office nor regional office of Bureau of Public Roads can approve structures over interstate to have more than a 15-foot vertical clearance.

Mr. BLATNIK. Let's see if I have that correct, Mr. Stevens.

In Montana, after the Boston meeting, the division office of the Bureau of Public Roads from Montana requested that all plans for structures already in the Interstate System be revised for 17-foot clearance, is that correct?

Mr. STEVENS. Now——

Mr. BLATNIK. Now—

neither division office or regional office of Bureau of Public Roads can approve structures over the Interstate System to have more than a 15-foot vertical clearance.

Can you explain the contradiction?

Mr. STEVENS. No, sir, I can only read what the State of Montana reported in the questionnaire.

Mr. MAY. Now, of course, the minimum clearance in Montana would be 16 feet?

Mr. STEVENS. I expect so, Mr. Counsel.

Mr. MAY. What did Nebraska report?

Mr. STEVENS. Nebraska indicated:

The Bureau at regional level has permitted plans which were revised to 17-foot vertical clearance to be processed for letting. However, this is with the understanding that increased cost to provide this additional clearance must be small and, therefore, approval is limited to minor rural separation structures.

Mr. MAY. In Nebraska the regional office under certain circumstances did allow Nebraska to move to a 17-foot clearance.

What did New Hampshire report?

Mr. STEVENS. New Hampshire on its toll roads designed bridges with 16-foot vertical clearance. On the Interstate System it designed bridges with 16-foot vertical clearance. Requested in 1959 by Bureau to reduce to 15-foot clearance. As a result of Boston meeting, changed to 17-foot clearance with Bureau approval. At present, design is with 17-foot clearance.

Mr. MAY. That is an interesting situation. This is a quote from the telegram sent by the State Highway Department of New Hampshire, is that true?

Mr. STEVENS. In answer to a questionnaire; that is correct, Mr. Counsel. May I quote:

New Hampshire on its toll road designed bridges with 16-foot vertical clearance. On Interstate System designed bridges with 16-foot vertical clearance. Requested in 1959 by Bureau to reduce to 15-foot clearance. As a result of Boston meeting, changed to 17-foot clearance with Bureau approval. At present, design is with 17-foot clearance.

What would the minimum clearance be in New Hampshire today?

Mr. STEVENS. Again I expect it would be 16 feet.

Mr. MAY. Here is a situation where New Hampshire had been building at 16 and the Bureau requested them to go to 15. They

moved up to 17 after the AASHO convention. Now they have to go back to 16 where they started from.

What did North Dakota report?

Mr. STEVENS. Since information was received that the 17-foot clearances may be eventually required, we have made a change-order changing four bridges under construction to 17½ feet. All interstate bridges are now being designed for 17½ feet vertical roadway clearance.

Bureau of Public Roads did approve the change-orders mentioned at our request. The Bureau has not taken official action on 17½-foot clearance. However, we are designing future structures for 17½-foot vertical clearance. It is believed that the higher clearance will be required by the time the structures are placed under contract.

Mr. WRIGHT. Mr. Chairman, might I ask a question so as to clarify in my mind just how this works?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Mr. Stevens, do I understand correctly that the States submit plans to their division offices for their regional offices of the Bureau of Public Roads for approval, and that approval then must be given by the Bureau of Public Roads prior to construction or letting of bids for this work? Is that standard procedure and has it been standard?

Mr. STEVENS. That is correct, Congressman.

Mr. WRIGHT. Now, I am confused as to the reason for the wide variance among these States. Do they lie within different regions of administrations so far as the Bureau of Public Roads is concerned?

Mr. STEVENS. These States that we have quoted excerpts from, Congressman, are in more than one region. How many regions, I do not know.

Mr. WRIGHT. Well, you wouldn't be expected to know just how the Bureau of Public Roads breaks down its administrative structure, but apparently the regional offices of the Bureau of Public Roads were not following a uniform standard in replying to the States during this period. Is that correct?

Mr. STEVENS. I think, Congressman, that at the annual meeting of AASHO in Boston, when Mr. Tallamy presented the request of the Defense Department to the executive committee of AASHO, and subsequently approved on the basis of 17 feet the following day by the chief administrative officers of AASHO, that everyone expected that the Secretary of Commerce would be in a position to adopt the 17-foot minimum clearance without delay. Believing that matter would be forthcoming within the very near future, it was only natural that the various State highway departments would begin to make an evaluation of the status of their designed plans for these structures in an effort to cooperate with what we expected to be an expeditious decision on the matter of the 17 feet. Some of this misunderstanding, which is apparent, could come from the expectation of the State highway departments that this decision would be forthcoming. In my own State, as I have already testified, we arranged to change design on three bridges. We did that without any official action on the part of the Secretary of Commerce in the way of adopting this 17-foot standard.

On the other hand, we believed that action would be forthcoming in the near future. I expect that the Bureau of Public Roads representatives believed that also.

There was a period in here from October until January when there was not an answer given to the recommendations of the chief administrative officers of AASHO on 17-foot clearance and these excerpts we have just quoted from here stem from that misunderstanding that occurred during that period.

Mr. WRIGHT. I believe you testified earlier that at your meeting in Chicago on July 12, 1956, the administrative officials of your organization, and your organization itself, speaking for the States, had approved the minimum standard originally * * * July 12.

Mr. STEVENS. Of 14 feet, right.

Mr. WRIGHT. And that those were then approved by the Secretary of Commerce on July 17 of that year, is that correct?

Mr. STEVENS. That is correct, sir.

Mr. WRIGHT. So that only a matter of 5 days had elapsed in that instance between your recommendations and the approval of the Secretary of Commerce?

Mr. STEVENS. That is correct.

Mr. WRIGHT. Consequently, you felt you had reason to expect that immediately upon your submission of this recommendation to the Secretary of Commerce, the standards would be raised to 17 feet.

Mr. STEVENS. I believe that is a fair statement in that the State did expect it would be done expeditiously.

Mr. WRIGHT. Here is the thing I don't understand. Why it is different in different States? Whereas in Iowa, the representative of the Bureau of Public Roads had first authorized them to proceed at the 17-foot basis and then later reversed this position and told them to go back to 14 feet, while in other States, the representative of the Bureau of Public Roads apparently had permitted construction of some at 17 feet and in North Dakota, apparently at 17½ feet. Is this all part of the same picture of this period of confusion where nobody knew exactly what was going to happen?

Mr. STEVENS. I would expect so. I can only speak with authority, of course, on what happened in my own State.

Mr. WRIGHT. Of course, but as representative of AASHO, I am just trying to get a picture of what was happening nationally. So there was a lot of confusion among the States during this period because nobody knew exactly what the standards were?

Mr. STEVENS. I think the States were making an effort, as I indicated earlier, not to go ahead with these designs on the basis of minimum clearance of 14 feet because they realized, of course, to do so might mean the expenditure of much larger sums of money in the future. The confusion which you indicate stemmed from their efforts to anticipate the change in the minimum clearance of 14 feet to 17 feet.

Mr. WRIGHT. Thank you.

Mr. SCHERER. Let me ask, do we have any evidence, other than from your analysis of the answers to this questionnaire prepared by our staff, that the different regional offices of the Bureau of Public Roads did issue conflicting instructions during this period?

Mr. STEVENS. I can only state what has been contained in the replies that I read to the questionnaire, Congressman.

Mr. SCHERER. Is it reasonable to suppose that some State highway departments might interpret the questions asked differently?

Mr. STEVENS. On the questionnaire?

Mr. SCHERER. Yes.

Mr. STEVENS. It is possible. On the other hand, I think that the questions for the most part are readily answerable on the basis of the experience that we have had.

Mr. SCHERER. Some of them were not answered, though, were they? Mr. Baldwin just asked a question about a number of States, I believe, that did not answer certain questions.

Mr. STEVENS. I believe they all answered the questions, Congressman.

Mr. MAY. Congressman, they did answer. For example, Alabama, when we asked them did the Bureau of Public Roads allow you to go ahead on 14 feet, they did not answer that; but when they asked them did the Bureau of Public Roads allow them to go ahead on 17 feet, they said yes. They went ahead at 17 feet instead of 14 feet.

Mr. SCHERER. The next one right under that I have is North Carolina, where they did not answer either A or B.

Mr. BLATNIK. Off the record.

(Discussion off the record.)

Mr. BLATNIK. Will you proceed?

Mr. SCHERER. May I pursue this a little further? Let us take Tennessee, for instance. The question was asked, "Has the Bureau of Public Roads allowed you to go ahead on 14 feet or 17 feet" and their answer was yes at 14 feet, but it does not say when. Naturally they allowed them to go ahead at 14 feet any time from 1956 up until October of 1959. And that would be true with reference to most of the States.

The question is, when did they allow them? Obviously, the Bureau of Public Roads allowed them to go ahead between 1956, when the geometric standards were adopted, until October 1959, at 14 feet. The failure to ask the proper question may be the reason why we have this confusion.

Mr. MAY. Mr. Chairman, I might mention we will have considerable testimony hereafter from representatives of the Bureau of Public Roads relating to the actions taken by the various regions and divisions after the American Association of State Highway Officials' convention.

Mr. SCHERER. All right. I do not know that, and the only reason why I am raising this question is I am trying to keep the record clear as we go along. Did the Bureau of Public Roads set out this particular question? I do not mean the Bureau of Public Roads, but rather did you in the American Association of State Highway Officials set out this particular question? If so, what was the question? It is only summarized here on my sheet. I can't tell what the question was. What was the full question?

Mr. STEVENS. The fourth question?

Mr. BLATNIK. The last question.

Mr. SCHERER. The fifth question.

Mr. STEVENS. The fifth question on the questionnaire reads as follows:

Has the Bureau of Public Roads allowed you to go ahead on 14 feet _____; 17 feet _____; if not, has the action been at the division or regional level?

Mr. SCHERER. Just what I said. It does not say when they allowed you to go ahead. Naturally, the Bureau of Public Roads allowed them to go ahead from 1956 all the way through 1959.

Mr. MAY. Mr. Stevens, do we have available the letter which enclosed this questionnaire to the States?

Mr. STEVENS. That is the letter that I thought was January 5. I do not have a copy of the letter here. I am sorry, Congressman.

Mr. MAY. Mr. Johnson is available in the room. Perhaps he has a copy of that letter.

Mr. WRIGHT. Mr. Chairman, could I ask a question while we are awaiting this?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. The question that immediately preceded that question, Mr. Stevens, asked whether the program had been delayed since the AASHO meeting in October, did it not?

Mr. STEVENS. That is correct, Congressman.

Mr. WRIGHT. All right. And immediately following that question you then asked whether or not the Bureau of Public Roads allowed them to go ahead on 14-foot standards or on 17-foot standards. The whole context of this entire inquiry, all that we are talking about, is what has happened since the AASHO meeting, is it not?

Mr. STEVENS. That is correct.

Mr. WRIGHT. So there has not been any question in any of this about what has gone on before that, has there?

Mr. STEVENS. The answers which were tabulated to question five indicated on the tabulation with a heading as follows:

After Boston meeting, 1959, States have proceeded as follows: And there is where I testified previously that 20 had proceeded with regular clearances, whatever they were—14 or 15 feet, or whatever it might have been. Sixteen of 17-foot clearance including one in Florida with overhead sign structure. Five with both regular and 17-foot clearances, and eight were unable to proceed with either regular or 17-foot clearance.

Mr. Johnson handed me a letter which went out to the chief administrative officials in connection with this questionnaire. It is a letter dated December 30.

Mr. SCHERER. Do you have that letter, Mr. Wright? Is that the letter you were reading from there, may I ask?

Mr. WRIGHT. No. I was reading back in memory from his testimony concerning the order in which the questions were asked. I have no copy of the letter, no, sir. But it seems to me that the letter and the entire point of the letter deals solely and exclusively with what has happened since October 1959 at the AASHO convention. Isn't that correct? The purpose of the inquiry was to find out what happened since the October meeting.

Mr. STEVENS. That was the general purpose of the inquiry, in my opinion.

Mr. WRIGHT. Thank you.

Mr. SCHERER. But they do not always ask the question in a way to bring about the desired results. If I saw the letter I might not ask so many silly questions, but we do not have the advantage of seeing these letters.

Mr. BLATNIK. Will you proceed, Mr. May?

Mr. MAY. Mr. Stevens, what did Ohio report?

Mr. STEVENS. Ohio reported as follows:

Since the Boston meeting the division office has reluctantly approved only the one urban expressway project for detail design preparation. This project, which is being designed for over standard 15-foot vertical clearance, will connect a major structure over the Ohio River for which a 17-foot clearance has been requested by the Bureau. Our program has been delayed because of their reluctance to give approval.

The division office has not been willing to proceed with site inspections or approve the preparation of detailed plans until the vertical clearance question has been settled at the regional level. This involves 4 projects now in Public Roads hands, comprising 20 structures.

Mr. MAY. So in that situation, Ohio could not get approval of the plans that were drawn up. What did Virginia have to say?

Mr. STEVENS. Virginia replied:

Immediately following the AASHO action in Boston in October, we took steps to increase the clearance on some structures not let to contract to 17 feet. We were well along with this when we were advised about November 23 that 17 feet had not been approved by the Bureau of Public Roads and we returned to the 14-foot clearance. This delayed structural design on the Interstate System over 1 month and the entire program at least 2 weeks.

We were advised by the division engineer following a Bureau of Public Roads meeting in Miami prior to the SASHO (Southern Association of State Highway Officials) that the whole matter was as yet unsettled and they would not approve 17 feet until it was settled, but would continue to give us aproval of 14 feet. The division office was giving us approval of 17 feet for the period between the AASHO meeting in Boston and the SASHO meeting in Miami (late November 1959), however.

Mr. MAY. And finally was Wisconsin. What did they report?

Mr. STEVENS. Wisconsin:

Regional office instruction to division highly desirable to suspend design on structures over Interstate. Division advises it is not possible for them to approve plans involving 14 feet 6 inches clearance over Interstate. Also, proposed work to modify designs for higher clearance should not be initiated.

Mr. BLATNIK. We have the same problem in the State of Minnesota. There is some uncertainty and there is variation in the district offices and regional offices of the Bureau of Public Roads all over the country.

Can we read a copy of a letter——

Mr. SCHERER. We have the letter now. Now what I would like to see is the copy that accompained that questionnaire. May I see that? I am sorry, Mr. Chairman.

Mr. BLATNIK. May I proceed with the situation in the State of Minnesota?

Here is a copy of a letter dated December 30, 1959. It is sent by our commissioner of highways, Mr. L. P. Zimmerman. The letter is addressed to the two Senators from Minnesota, Hubert H. Humphrey and Eugene J. McCarthy, and to myself, John A Blatnik.

The letter reads as follows:

EXHIBIT 26

GENTLEMEN: The following telegram was sent this date to A. E. Johnson executive secretary of the American Association of State Highway Officials. Here is the telegram:

"On basis of action taken at Boston relative to 17-foot bridge clearances on the Interstate and the anticipated approval by Secretary of Commerce, region 5, of the Bureau of Public Roads on October 22, 1959, directed States to provide for such 17-foot clearances even to the extent of modifying design of most projects already under contract. Minnesota immediately complied with this directive and designs and on most projects were changed accordingly.

"On December 18, 1959, we were advised verbally that region 5 had taken premature action and that the Bureau of Public Roads at this time will not approve any plan which provides for bridge clearances of 17 feet. It is our understanding that if the Secretary of Defense concurs in the position of the Secretary of Commerce we may be required to provide the 17-foot clearances."

This uncertainty is creating havoc with our ability to place Interstate work under early contract and is seriously retarding design progress. We will greatly appreciate anything you can do to expedite early resolution of this impasse.

L. P. ZIMMERMAN,
Commissioner of State Highway Commission.

Mr. MAY. Mr. Stevens, I have here three letters which you might identify.

Mr. STEVENS. The first letter is dated January 4, 1960, addressed to Mr. A. E. Johnson, executive secretary of the American Association of State Highway Officials, by Mr. B. D. Tallamy, Federal Highway Administrator.

Mr. MAY. Could we make that exhibit 26–A, Mr. Chairman?

Mr. BLATNIK. Without objection it is so ordered.

EXHIBIT 26–A

BUREAU OF PUBLIC ROADS,
U.S. DEPARTMENT OF COMMERCE,
Washington, D.C., January 4, 1960.

Mr. A. E. JOHNSON,
Executive Secretary, American Association of State Highway Officials, Washington, D.C.

DEAR ALF: In response to your letter of October 23, I recommended on October 27 to the Secretary of Commerce that he approve the change in vertical clearance standard for the National System of Interstate and Defense Highways requested by the Department of Defense October 1 and acted upon by AASHO October 10 and 11, 1959.

Subsequently there was an exchange of correspondence between the Secretary of Commerce and the Secretary of Defense dealing with budgetary aspects of this matter. As a result of this exchange the Department of Defense now states that although a 17-foot minimum vertical clearannce is desirable, justification exists for only a 16-foot minimum vertical clearance to meet presently foreseen requirements.

The AASHO action was essentially an expression of willingness to meet vertical clearance needs of the Department of Defense, and seems to imply a willingness to meet any increase which does not exceed the 17 feet considered. I would appreciate your advising me if you concur in my interpretation of the AASHO action, as I would like to make a further recommendation to the Secretary of Commerce in the light of the recent action of the Department of Defense.

Sincerely,

B. D. TALLAMY,
Federal Highway Administrator.

Mr. STEVENS. The second letter is dated January 5, 1959, which obviously should be 1960. I think that was the source of my confusion

earlier, Mr. Counsel. It was written to the chief administrative officers of the American Association of State Highway Officials by Mr. A. E. Johnson, executive secretary of the AASHO.

The third letter is dated January 8, 1960, written to the Honorable B. D. Tallamy, Federal Highway Administrator, by Mr. A. E. Johnson, executive secretary of the AASHO.

Mr. MAY. Mr. Chairman, could we make that second letter indicated by Mr. Stevens, 26–B, and the third letter, 26–C?

Mr. BLATNIK. Without objection, it is so ordered.

(The documents referred to were marked "Exhibits 26–B and 26–C," respectively, for identification.)

Mr. MAY. Mr. Stevens, this action becomes important in the hearings. Would you read the first letter, please?

Mr. STEVENS. The first letter is dated January 4, 1960.

Mr. MAY. So in that letter Mr. Tallamy points out on October 27 he recommended that the Secretary of Commerce approve the change in standards to 17 feet, and thereafter there was an exchange of correspondence between the Secretary of Commerce and the Secretary of Defense dealing with the budgetary aspects of this matter, and, as a result of the exchange, the Department of Defense now states that although 17-foot minimum vertical clearance is desirable, justification exists for only a 16-foot minimum vertical clearance to meet presently foreseen requirements. What action did Mr. Johnson take thereafter?

Mr. STEVENS. Mr. Johnson wrote to the chief administrative officers of the American Association of State Highway Officials under date of January 5, 1960, indicating that the letter was important and requires telegraphic reply. The letter reads as follows:

EXHIBIT 26–B

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS,
Washington, D.C., January 5, 1960.

Re important, requires a telegraphic reply

To the Chief Administrative Officers of the American Association of State Highway Officials.

GENTLEMEN: The following is a letter received from Administrator Tallamy today on the matter of the 17-foot clearance on certain connected sections of the National System of Interstate and Defense Highways:

"JANUARY 4, 1960.

"Mr. A. E. JOHNSON,
"Executive Secretary, American Association of State Highway Officials, Washington, D.C.

"DEAR ALF: In response to your letter of October 23, I recommended on October 27 to the Secretary of Commerce that he approve the change in vertical clearance standard for the National System of Interstate and Defense Highways requested by the Department of Defense October 1 and acted upon by AASHO October 10 and 11, 1959.

"Subsequently there was an exchange of correspondence between the Secretary of Commerce and the Secretary of Defense dealing with budgetary aspects of this matter. As a result of this exchange the Department of Defense now states that although a 17-foot minimum vertical clearance is desirable, justification exists for only a 16-foot minimum vertical clearance to meet presently foreseen requirements.

"The AASHO action was essentially an expression of willingness to meet vertical clearance needs of the Department of Defense, and seems to imply a willingness to meet any increase which does not exceed the 17 feet considered. I would appreciate your advising me if you concur in my interpretation of the AASHO action, as I would like to make a further recommendation to the

Secretary of Commerce in the light of the recent action of the Department of Defense.

"Sincerely,

"B. D. TALLAMY,
Federal Highway Administrator."

Inasmuch as the Federal Aid Highway Act of 1956 requires that the standards be developed by the Secretary of Commerce in cooperation with the State Highway Departments, Administrator Tallamy wants to be sure of the intent of the States' action at the Boston convention. It is my interpretation that the States were agreeable to extending the official minimum vertical clearance, after any needed resurfacing from 14 feet to and not to exceed a similar minimum of 17 feet.

Please wire me at once if this is your feeling on the subject.

Yours very truly,

A. E. JOHNSON, *Executive Secretary.*

Mr. MAY. With this action Mr. Johnson asked the States whether they agreed with Mr. Tallamy's interpretation of the previous action of October of the Boston convention?

Mr. STEVENS. That is correct, Mr. Counsel.

Mr. MAY. What is the next step?

Mr. STEVENS. Mr. Johnson received his telegraphic answers from the State highway administrators, and on January 8, 1960, he wrote to the Honorable B. D. Tallamy, Federal Highway Administrator, Washington, D.C., as follows:

EXHIBIT 26–C

MY DEAR MR. TALLAMY: In answer to your letter of January 4, 1960, on the subject of vertical clearance over the roadway of the National System of Interstate and Defense Highways, please be advised that replies received from the State highway departments concurring in your interpretation of the AASHO action on the subject on October 10 and 11, 1959, exceed the required 36 required for official action on the part of AASHO.

On this basis the States concur in the 16-foot clearance now deemed adequate for defense needs by the Department of Defense for the interstate system.

Yours truly,

A. E. JOHNSON, *Executive Secretary.*

Mr. MAY. So on January 8, Mr. Johnson advised Mr. Tallamy that the States were willing to approve the 16-foot minimum vertical clearance standards.

Mr. STEVENS. That is correct, sir.

Mr. MAY. Mr. Stevens, would you briefly describe the AASHO road tests now being conducted at Ottawa, Ill., and state their purpose?

Mr. STEVENS. The AASHO road test research project, currently under way in Illinois, was originally conceived by the State highway officials to answer some important and pressing economic and engineering questions posed by current transportation needs, and the essentiality of getting the maximum public return from the highway dollar.

The test, which is being administered by the Highway Research Board of the National Academy of Science at the request of the AASHO, is a cooperative operation of the State highway departments, the Bureau of Public Roads, the Department of Defense, and certain segments of industry.

AASHO requested the Highway Research Board to take on the project in February 1955. Construction, instrumentation, organization, and assembly of equipment started thereafter. Test traffic

started in October 1958 and current plans are for it to stop June 30, 1960, with some special tests thereafter.

The project consists of five two-lane traffic loops and one nontraffic loop, each consisting of flexible type asphaltic pavement and rigid portland cement concrete pavement of various thicknesses and design. Each lane is traveled by one axleloading only and the axleloadings vary from 2,000 pounds to 50,000 pounds.

The project was launched by the highway officials to yield data on the effect of certain axleloadings on the various test sections of the two major types of pavement to be used in developing improved, scientific structural design procedures for pavements for modern loadings, and to develop the optimum balance between the best road life and the maximum road usage for each highway dollar.

From the test we hope to develop the space dimensions, the gross weight, and the weight distribution of the maximum size vehicle which gives this desirable balance.

After the dimensions of the vehicle have become known, then the vertical clearance requirements of the vehicle could also be determined. This, of course, is determination for the normal civilian transport needs. It is for this reason that we have delayed action on any and all requests for increased vertical clearances for possible future civilian requirements.

The last recommended weight and size policy adopted by AASHO is as of April 1946 and recommends the maximum height for motor vehicles of 12 feet 6 inches.

In the Federal-Aid Highway Act of 1956, the Congress also took cognizance of the AASHO road test and recognized its potential importance and called on the Secretary of Commerce for certain studies and data that will be predicated to a large extent on the outcome of the project. The reports are to be submitted to Congress in January 1961.

Mr. BLATNIK. Are there any questions from the members? Any questions on my right?

Mr. KLUCZYNSKI. We have heard from all of the other States. Let us hear from the great State of Illinois, the land of Lincoln, and also the State of the former president of the association, Mr. Bartelsmeyer. What did he answer to the questionnaire?

Mr. STEVENS. I have no excerpt from the questionnaire from Illinois, Congressman.

Mr. MAY. Mr. Congressman, I have here the results of the questionnaire completed by the State of Illinois. Illinois did not volunteer additional information, as some of the other States did, but Illinois did say that the standard minimum vertical clearance in Illinois prior to the AASHO meeting in mid-October 1959 was 14 feet and 9 inches.

Mr. KLUCZYNSKI. Yes.

Mr. MAY. And the maximum legal vehicle height is 13 feet 6 inches. After the AASHO meeting Illinois maintained that 14-feet 9-inches vertical clearance. Illinois did volunteer that actual construction had not been delayed through this problem, but design work and acquisition of right-of-way had been delayed.

Illinois also stated that there were 168 structures involving overhead clearances on the urban circumferential routes and rural routes of the Interstate System with less than 16 feet.

Mr. GRAY. Will the gentleman yield?

Mr. MAY. Yes.

Mr. GRAY. I would like to say Mr. Bartelsmeyer was here on the opening day of our hearings and told me that in accordance with the 16-foot order of the Bureau of Public Roads he was notifying all contractors to hold, and they were revising all their plans in Illinois to the 16-foot standard.

Mr. MAY. Sixteen or seventeen?

Mr. GRAY. Sixteen feet. To comply with the recent order of the Bureau of Public Roads for a 16-foot minimum on all Interstate System roads, both in planning and those that had already been let, and I think 116 bridges.

Mr. MAY. I might say I also talked with Mr. Bartelsmeyer in this connection and he pointed out after the AASHO meeting at Boston that Illinois did revise some of their designs to the 17-foot clearance, and now they are revising them back.

Mr. GRAY. That is right.

Mr. BLATNIK. Are there any questions? Mr. Scherer?

Mr. SCHERER. No questions, except if it has not already been done I would ask that the questionnaire from the American Association of State Highway Officials dated January 1, 1960, to the various State highway departments, together with the accompanying letter, be included in the record in full.

Mr. BLATNIK. Without objection, it is so ordered and those documents will be copied in the record at this point in full.

(The documents referred to as exhibit 27 are as follows.)

EXHIBIT 27

VERTICAL CLEARANCES OVER STATE HIGHWAYS

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS,
January 1, 1960.

1. What vertical clearance do you provide for currently (net after possible future resurfacing and in effect prior to the Boston AASHO meeting)? _____ feet.

2. What is your legal vehicle height? _____ feet.

3. What next vertical clearance have you been providing on the interstate since the Boston AASHO meeting? _____ feet.

4. Since the Boston AASHO meeting, has your program been delayed due to the delay in formalizing an Interstate System vertical clearance?

5. Has the Bureau of Public Roads allowed you to go ahead on 14 feet _____; 17 feet _____; if not, has the action been at the division or regional level?

6. How many existing overhead clearances do you have on the Interstate System on rural and outer urban circumferential routes that are less than 16 feet? _____

N.B.—Return one of these and retain the other for your files.

_____
State

_____
Name *Title*

DECEMBER 30, 1959.

To the Chief Administrative Officials of the American Association of State Highway Officials.

GENTLEMEN: This office has just been visited by the Blatnik committee investigators and hearings are planned on the matter of overhead clearances for the Interstate System in 2 or 3 weeks at the most.

The information asked for on the attached sheet was requested by the investigators.

After AASHO acted on the Transportation Officer's 17-foot request at the Boston meeting, the matter has appeared to be far less settled than we thought and I believe that who would furnish the money has gotten the Commerce and Defense Departments and the Budget Bureau into the act since that time.

The committee investigators are wondering why the matter has taken so long to be resolved since 1956, why there is no record of formal acceptance of the interstate standards, routes, etc., in the records of the Defense Department, and if there is sufficient interagency liaison in the Federal Government to protect the national interest.

The investigators seem to think that AASHO did proper in taking the action that it did on the clearance matter, and that if AASHO had not taken this action the matter might not have been resolved until thousands more structures might have been completed and the charge might be made later that the States failed to build a system that could be used for defense. It does not appear that the investigators are at all critical of the Bureau of Public Roads but mainly of the Defense Department.

I told the investigators that the highway departments wanted to know at the earliest time if increased clearances were needed or not, and early enough to correct as many in the design stage as possible, and that we would be extremely happy to return to a 14-foot minimum if Defense needed nothing more, and we would prefer it.

I have not yet seen the official letter that is in transit to the Commerce Department. I do, however, understand it will say that 16 feet is all that is presently needed.

It is possible that there might be a move to develop higher clearance on some primary routes with 50–50 funds where so many interchanges and separations will not be involved. Such routes would actually be the main defense transportation routes for large military loads. This is only speculation and rumor at this time.

Please return the completed attached sheet at your earliest convenience. We are in a hurry for the information.

Over 40 States furnished the information promptly that was requested by the investigators as to overheight permits. They were impressed by the number of overheight movements and the promptness of the highway departments in complying.

Two or three States indicated it would be too difficult to furnish the information, and did not comply. The others came in late.

President Stevens has suggested that failure to furnish requested information promptly and completely could hurt the State position in a program of this kind where the attitude seems to correct all nonuniformity or shortcomings with Federal control or regulations.

Yours very truly,

A. E. JOHNSON, *Executive Secretary.*

Mr. BLATNIK. Following this, may we have a tabulation of the results of the AASHO questionnaire, dated January 1, 1960. Without objection, that will be put in the record at this point.

(Exhibit 27A follows:)

EXHIBIT 27A

Results of AASHO questionnaire dated Jan. 1, 1960

State	Standard prior to AASHO meeting (mid-October 1959)	Legal vehicle height	Clearance being provided since AASHO meeting (mid-October 1959)	Program delayed since AASHO meeting	Bureau of Public Roads allowed go ahead at (a) 14 feet—(b) 17 feet	Number of existing overhead clearances on rural and urban circumferential routes less than 16 feet
Alabama	16 feet	12½ feet	17 feet On projects not let to contract prior to Boston meeting.	Yes In design and planning due revising plans previously completed.	(a) —— (b) Yes.	None.
Arizona	14 feet 9 inches	13 feet 6 inches	14 feet 9 inches	No	(a) Yes (b) Yes. In 4 instances.	8.
Arkansas	14.67 feet	13½ feet	None contracted	Yes	(a) No (b) Yes.	33.
California	15 feet	do	15	No	(a) Yes, 15 feet (b) ——.	210 plus.
Colorado	16 feet	13 feet 6 inches	17	No	(a) —— (b) Yes.	None.
Connecticut	14 feet	12 feet 6 inches	14 feet	Yes Because of lack of official position of Bureau of Public Roads.	(a) —— (b) ——. No official position taken by Bureau of Public Roads.	129.
Delaware	do	do	17 feet	Yes	(a) —— (b) Yes. On one project at this time.	2.
Florida	15 feet	do	15 feet	No	(a) Yes, 15 feet (b) ——.	46.
Georgia	15 feet 9 inches	13 feet 6 inches	17 feet	No	(a) Not requested (b) Yes.	20.
Idaho	15 feet	14 feet	15 feet	Yes	(a) Yes, 15 feet (b) Yes.	31.
Illinois	14 feet 9 inches	13 feet 6 inches	14 feet 9 inches	Actual construction has not been delayed. Design work and acquisition of right-of-way has been delayed.	(a) —— (b) No. We were instructed by the Division office.	168.
Indiana	14 feet 3 inches	do	14 feet 3 inches	Yes, greatly	(a) No (b) No.	75.
Iowa	14 feet	13 feet 6 inches	14 feet	Yes (See Iowa addendum.)	(a) Yes (b) ——	97.

Kansas	15 feet	do	17 feet	No	(a) —— (b) Yes.	67.
Kentucky	14 feet	do	15 feet	Some slow up due to uncertain clearance that may be required.	(a) Yes 15 feet (b) ——	44.
Louisiana	15 feet	12 feet 6 inches	15 feet	No	(a) Yes 15 feet (b) ——	21.
Maine	14 feet 6 inches	do	17 feet Except in 1 instance where there were structures having 14-foot 6-inch clearance on each side and in the immediate vicinity.	No	(a) Yes (b) Yes.	68.
Maryland	16 feet	do	16 feet	No	(a) —— (b) Yes. 17 feet on 1 project for which bids were received.	None.
Massachusetts	14 feet	None	14 feet	No	(a) Yes (b) No.	42.
Michigan	do	12 feet 6 inches	17 feet	Yes	(a) Yes (b) No.	278.
Minnesota	15 feet	13 feet 6 inches	do	Oct. 22, 1959, started design 17-foot clearance. Dec. 11, 1959, rescinded by BPR.	(a) No (b) No.	21.
Mississippi	14 feet	12 feet 6 inches	do Except plans practically complete.	No	(a) Yes On plans substantially advanced. (b) Yes. On new Interstate plans.	80.
Missouri	14 feet 9 inches	do	14 feet 9 inches	Yes	(a) —— (b) ——	49.
Montana	15 feet	13 feet 6 inches	17 feet	Yes (See Montana addendum).	(a) No (b) ——	2.
Nebraska	do	do	17.4 feet	Yes	(a) —— (b) Yes. (See Nebraska addendum).	19.
Nevada	do	None	15 feet	No	(a) Yes (b) No.	1.
New Hampshire	14 feet	13 feet 6 inches	17 feet	No	(a) —— (b) Yes.	17.
New Jersey	do	13 feet 5 inches	14 feet	Delayed until Dec. 11, 1959, when regional engineer gave clearance on either 14 feet 3 inches or 17 feet.	(a) Yes (b) Yes.	21.
New Mexico	16 feet	13 feet 6 inches	17 feet	Yes	(a) No (b) Yes. Bureau concurred in 17 foot clearance but did not require it in the absence of a directive to their division office.	10.

Results of AASHO questionnaire dated Jan. 1, 1960—Continued

State	Standard prior to AASHO meeting (mid-October 1959)	Legal vehicle height	Clearance being provided since AASHO meeting (mid-October 1959)	Program delayed since AASHO meeting	Bureau of Public Roads allowed go ahead at (a) 14 feet—(b) 17 feet	Number of existing overhead clearances on rural and urban circumferential routes less than 16 feet
New York	14 feet 2 inches	13 feet	14 feet 2 inches	No	(a) Yes (b) —.	586.
North Carolina	14 feet 6 inches	12 feet 6 inches	17 feet For plans in design stage.	No Except for time required in revising plans for 17 foot clearance.	(a) (b) —.	178.
North Dakota	15 feet	13 feet 6 inches	17 feet 6 inches	Yes	(a) (b) Yes. (See North Dakota addendum.)	55.
Ohio	do	do	15 feet	Yes (See Ohio addendum.)	(a) No. (b) No.	367.
Oklahoma	16 feet	do	16 feet	No	(a) Yes, 16 feet (b) No.	None.
Oregon	15 feet	12 feet 6 inches	15 feet	No	(a) Yes (b) No.	90.
Pennsylvania	14 feet	13 feet 6 inches	14 feet	No Pennsylvania has been proceeding on the basis of 14 feet.	(a) Yes (b)—.	311.
Rhode Island	do	12 feet 6 inches	do	No	(a) (b)—.	4.
South Carolina	15 feet	do	15 feet	No	(a) No (b) Yes.	163.
South Dakota	14 feet	13 feet	do	No	(a) (b)—. The local bureau office is awaiting official direction from the Bureau in Washington.	33.
Tennessee	do	12 feet 6 inches	14 feet	No	(a) Yes 14 feet (b)—.	95.
Texas	do	13 feet 6 inches	do	No	(a) Yes (b)—.	254.
Utah	15 feet	14 feet	17 feet For design only; no structures have gone to contract	Yes	(a) No (b) No.	5.
Vermont	15 feet 3 inches	12 feet 6 inches	17 feet On design undertaken	Slightly	(a) Yes (b) Yes	10.

Vermont	15 feet 3 inches	12 feet 6 inches	17 feet On design undertaken since Boston AASHO meeting.	Slightly	(a) Yes (b) Yes.	10.
Virginia	14 feet	do	14 feet	Yes (See Virginia addendum).	(a) Yes (b) No.	49.
Washington	14 feet 6 inches	13 feet 6 inches	17 feet	No	(a) ____ (b) Yes.	125.
West Virginia	14¾ feet	12 feet 6 inches	14¾ feet	No	(a) Yes (b) ——.	9.
Wisconsin	14 feet	13 feet 6 inches	17 feet	Yes (See Wisconsin addendum.)	(a) No. (b) No.	60.
Wyoming	do	do	do	No	(a) ____ (b) Yes.	11.

(The addendum to the questionnaire referred to is as follows:)

ADDENDUM

IOWA

On October 28 we received a memorandum from the Bureau of Public Roads, which advised us to immediately go to 17-foot vertical clearance. It further advised us to make changes in projects under contract to provide for this 17-foot clearance. A quotation from this memorandum follows:

"In examining the feasibility of undertaking such changes, full weight should be given to the fact that the correction will need to be made later unless included in the present construction."

On the basis of this memorandum, we stopped several contractors from doing further work on the structures. We immediately started revision of all projects under contract on which construction had not progressed to such a point as to make changes impractical. Before these revisions had been completed, we were advised by the Bureau of Public Roads that they could not approve such changes and that the structures should be constructed with the 14-foot clearance. Two interchanges had progressed to the point where it seemed more desirable to complete them on the 17-foot clearance. On these two structures we have recently been advised that the Bureau of Public Roads cannot approve them on the basis of 17-foot clearance, and we are presently redesigning these structures for 14-foot clearance. Much delay has been caused by the clearance question.

We have 97 bridges presently constructed, or under construction, which were designed for 14-foot clearance. In addition, we have 15 structures on which design is complete, but contracts have not been awarded, providing only 14-foot clearance. We are currently preparing plans on 21 additional structures on the basis of the 14-foot clearance requirement.

MONTANA

After the Boston meeting the division office of the Bureau of Public Roads requested that all plans for structures over the Interstate be revised to provide for a 17-foot vertical clearance, including two structures already under contract. Now neither the division office nor the regional office of the Bureau of Public Roads can approve structures over the Interstate that have more than a 15-foot vertical clearance.

NEBRASKA

The Bureau at the regional level, has permitted plans, which were revised to 17-foot vertical clearance, to be processed for letting. However, this is with the understanding that the increased cost to provide this additional clearance must be small and, therefore, approval is limited to minor rural separation structures.

NORTH DAKOTA

Since the information was received that 17-foot clearances may be eventually required, we have made a change order changing four bridges under construction to 17.5 feet. All Interstate bridges are now being designed for a 17.5-foot vertical roadway clearance.

* * * The Bureau of Public Roads did approve the change orders mentioned * * * at our request. The Bureau has not taken official action on the 17.5-foot clearance. However, we are designing future structures for 17.5-foot vertical clearance. It is believed that the higher clearance will be required by the time that the structures are placed under contract.

OHIO

Since the Boston meeting, the division office has reluctantly approved only the one urban expressway project for detail design preparation. This project, which is being designed for over-standard 15-foot vertical clearance, will connect a major structure over the Ohio River for which a 17-foot clearance has been requested by the Bureau. Our program has been delayed because of their reluctance to give approvals.

The division office has not been willing to proceed with site inspections or approve the preparation of detailed plans until the vertical clearance question

has been settled at the regional level. This involves 4 projects, now in Public Roads hands, comprising 20 structures.

VIRGINIA

Immediately following the AASHO action in Boston in October, we took steps to increase the clearance on some structures not let to contract to 17 feet. We were well along with this when we were advised about November 23 that 17 feet had not been approved by the Bureau of Public Roads and we returned to the 14-foot clearance. This delayed structural design on the Interstate System over 1 month and the entire program at least 2 weeks.

We were advised by the division engineer following a Bureau of Public Roads meeting in Miami prior to the SASHO (Southern Association of State Highway Officials) that the whole matter was as yet unsettled and they would not approve 17 feet until it was settled, but would continue to give us approval of 14 feet. The division office was giving us approval of 17 feet for the period between the AASHO meeting in Boston and the SASHO meeting in Miami (late November 1959), however.

WISCONSIN

Regional office instruction to division highly desirable to suspend design on structures over I Division advises it is not possible for them to approve plans involving 14-foot 6-inch clearance over I. Also, proposed work to modify designs for higher clearance should not be initiated.

Mr. BLATNIK. Are there any further questions at this time?

(No response.)

Mr. BLATNIK. The Chair will ask the hearings be recessed at this point to allow the members to be on the floor by 12 o'clock. The first order of business will be the resolution asking for the appropriation for the investigation of this subcommittee.

We will reconvene at 2 o'clock.

Mr. KLUCZYNSKI. Mr. Chairman, before you adjourn, may I make this statement to the witness: You represent one of the greatest organizations in this country and you are doing a marvelous job. I happen to have had the good fortune to be one of the members of the committee who have gone out into Illinois and witnessed this. You are doing a fine job and I think if the Bureau of Public Roads and some other agencies would follow your recommendations we would save the taxpayers many millions of dollars.

Mr. STEVENS. Thank you, Congressman. May I say to you, that AASHO and all of its member departments certainly wish to cooperate with this subcommittee in its work and I think perhaps our activities to date have indicated that. We are only hopeful that when the final results of our investigations are evaluated and analyzed, that you will be able, and I am sure you will be, to give credit to the many fine highway administrators we have in this country, and the efforts that they are putting into this program.

While a program of this size naturally may result in some wrongdoing, although we think that is going to be very isolated, we do expect you are going to find the State highway departments cooperating with the Bureau of Public Roads in carrying on a program in an advantageous and satisfactory manner.

Mr. BLATNIK. Mr. Stevens, the Chair expresses in behalf of the committee our due appreciation for the most helpful and cooperative assistance we received from you and your officers, and your able executive secretary, and your fine organization. Thank you most kindly.

Mr. STEVENS. Thank you, Mr. Chairman.

Mr. SCHERER. Before we adjourn, there are two things I want to say and, of course, I speak for the minority when I say that we concur in the sentiments expressed by the gentleman from Illinois, Mr. Kluczynski, and our chairman, Mr. Blatnik.

I want to ask you just one question: You indicated you want to cooperate with this committee. You have worked well with the Bureau of Public Roads over the years and you have received good cooperation from the Bureau of Public Roads, have you not? In your organization?

Mr. STEVENS. The relationship between the Bureau of Public Roads and the State highway departments with the AASHO has been very good over the years. That is correct, Mr. Congressman.

Mr. SCHERER. One more thing before we adjourn: Are we going to meet tomorrow afternoon?

The only reason why I asked is, the Governors' Conference on Roads, to which I believe you have been invited, is starting at 2 o'clock tomorrow in the Ways and Means Committee room, and some of the members of this Subcommittee on Roads have been invited to attend the Governors' conference because they want to ask us some questions.

Mr. BLATNIK. I will have to check that. I do not recall being invited, but I may have been.

Mr. SCHERER. I am sure you have been. Mr. Fallon has been. It is highly important that some of us be there.

Mr. BLATNIK. Yes, I think it is important. I will check on how many agreed to be there. If at all possible, we would like to continue with the hearings in order to catch up on the time we lost last week, and so that we can conclude the hearings this week.

We will recess until 2 o'clock this afternoon.

(Whereupon, at 11:45 a.m., the hearings were recessed until 2 p.m. of the same day.)

AFTERNOON SESSION

Mr. BLATNIK. The subcommittee investigating the Federal-aid highway program will please come to order.

We are continuing the public hearings of this morning.

Our first witness this afternoon is Mr. Alex Whilldin, Chief, Transportability Branch, Office, Deputy Chief of Transportation for Transportation, Department of the Army. Mr. Whilldin, will you please take the witness chair?

STATEMENT OF ALEX WHILLDIN, CHIEF, TRANSPORTABILITY BRANCH, OFFICE, CHIEF OF TRANSPORTATION, DEPARTMENT OF THE ARMY

Mr. BLATNIK. Thank you. Mr. May, will you please proceed with the interrogation?

Mr. MAY. Mr. Whilldin, how long have you held your present position?

Mr. WHILLDIN. Since 1952, sir, with 1 year out.

Mr. MAY. How long have you been associated with the Department of the Army?

Mr. WHILLDIN. Since the start of the war, sir, 1942, with the exception of 1 year.

Mr. MAY. What did you do previously?

Mr. WHILLDIN. I was with the Pennsylvania Railroad in the clearance department.

Mr. MAY. You were clearance engineer for the Pennsylvania Railroad?

Mr. WHILLDIN. Yes, sir.

Mr. MAY. Mr. Whilldin, I will ask you, who had the following thoughts in August 1955, 1 year before the Interstate System was established? I will read them to you:

Modern design engineering pertaining to military and commercial items has tended to increase the size and weight of many items to meet user requirements. Many Government contracts are being awarded in some instances for the manufacture of large military items without apparent regard to the engineering difficulties of movement from the manufacturing site.

Mr. WHILLDIN. I did, sir.

Mr. MAY. Who had these thoughts in 1955?

There has been a tendency on the part of military planners and surface transportation agencies to use experience of the past for current and future planning. From the transportation aspect this type of planning is no longer practical, due, in fact, to the volume increase in numbers of large military and commercial items, the near static condition of surface path of movement barriers, and the fact that another war will be one of quick movement demanding fluid supply lines.

Mr. WHILLDIN. I did, sir.

Mr. MAY. Who had these thoughts in 1955?

The current situation is that the military services now are designing, procuring, and having in stock thousands of items of excessive dimensions and weight, which if a world war were to start today, may cause adverse conditions.

Mr. WHILLDIN. Well, I did that.

Mr. MAY. Who had these thoughts in 1955?

Increased transit time in shipment or movement may cause the arrival of the item at a destination too late to accomplish the purpose for which the item was designed.

Mr. WHILLDIN. I did, sir.

Mr. MAY. Who had these thoughts in 1955?

Limiting rail and highway routes to one-way traffic would reduce the forward flow of all mobile troops, equipment and freight moving behind an excessive width item, to the slow speed required for movement of the item and will cause traffic moving to the rear to be routed over other rail and highway routes thereby reducing the forward and rear channels of supply. The results to the field army could be disastrous.

Mr. WHILLDIN. Well, I did, sir, and that was in connection with Mr. Gass of the AER.

Mr. MAY. Who had these thoughts in 1955?

This reads:

Disassembling an item for shipment will expedite movement of the item from origin to destination, but until reassembling is accomplished the item is of no value to the user.

Mr. WHILLDIN. Again, from the same paper, sir, I did.

Mr. BALDWIN. Excuse me. What paper is this?

Mr. WHILLDIN. What, sir?

Mr. BALDWIN. From the same paper again?

Mr. WHILLDIN. Staff study. It was unofficial, sir.

Mr. BALDWIN. Staff study?

Mr. WHILLDIN. Staff study which I tried to get out of the Chief, Transportation Office, an unofficial paper.

Mr. BALDWIN. You say "unofficial paper." You mean it simply remained in your office; is that it?

Mr. WHILLDIN. It was never signed by the Chief of Transportation, sir.

Mr. BALDWIN. Thank you.

Mr. MAY. Mr. Whilldin, do you know if you were alone in your thinking in 1955, or did other personnel and officials of the Army Transportation Corps also share your opinion?

Mr. WHILLDIN. I believe that opinion was shared, sir.

Mr. MAY. So these problems were faced by the military in 1955? Some of your manuals set forth the dimensions of certain equipment. Could you explain that as these pieces of equipment come off the assembly line, they might vary, the dimensions might vary?

Mr. WHILLDIN. Well, the dimensions did vary, sir.

Mr. MAY. Could you cite a couple of examples?

Mr. WHILLDIN. Well, one of them I believe was on the tanks. They were constructed in three different places, Chrysler, Ford, and Fisher, in that the heights of the tanks varied.

Mr. MAY. By how much?

Mr. WHILLDIN. I cannot tell you that, sir, but just enough to hit a bridge in Europe.

Mr. MAY. Could they vary as much as, say, 8 inches off the same assembly line?

Mr. WHILLDIN. I do not believe I could answer that, sir. There is a variance on the castings, I believe, but that was something that the Ordnance Corps would have to answer.

Mr. MAY. Mr. Whilldin, you had considerable experience as a clearance engineer for the railroad and other experience in working for the Army; will you explain to the subcommittee some of the problems involved when oversized items are transported by the railroad?

Mr. SCHERER. Mr. Counsel, before we leave the subject of this report from which you have been reading excerpts, could we clarify a little bit how this report originated?

Mr. WHILLDIN. Yes, sir. Let's see, back just after World War II, sir, I had been clearance officer for the Army and had moved, of course, these large objects primarily by rail around the United States and to the ports.

Now, during the war we could not effect reductions in size and weight of those particular items and had to take them as received.

The railroads had to detour, the highways the same thing. In several cases, we used combinations of rail, highway and water to arrive at destination.

At the end of the war another staff study was written. That one was primarily rail in which we attempted to get the research and development agencies of the military departments to either effect reductions or make them easy to move either by disassembly or some other means.

That particular paper was signed out by, I believe, General Heileman. It went to the Secretary of Defense and it came out or rather a directive came out, on rail clearances. That asked the R. & D. people to work with the transportation people.

Mr. SCHERER. What is the R. & D. people?

Mr. WHILLDIN. Research and development, and that would be before the fact, not after the item was complete. That particular directive did not do the job intended and actually it was only for rail. I might say that the directive that came out applied to the Army, Navy, and Air Force.

Mr. SCHERER. This was a directive that came out and said, "Don't plan or build objects that cannot be moved."

Mr. WHILLDIN. This one said research and development agencies of the military services would work with the transportation people prior to the development of the item.

Mr. SCHERER. To see if it could be transported, that was the purpose of the directive?

Mr. WHILLDIN. That is right.

Mr. SCHERER. When you say "work with the transportation people," do you mean the transportation people of the Department of Defense?

Mr. WHILLDIN. That is correct.

Mr. SCHERER. That was in 1955?

Mr. WHILLDIN. No, sir; that was previous to that, that was about 1952, I believe. I don't remember the exact date on that. Later on we felt that we perhaps could gain more if we could get the recent engineering part of DOD into the picture to replace the one that came out of the supply and logistics organization.

This paper we are talking about, the 1955 paper, is the second staff study that was written to attempt to, well, we will say, get a more complete working arrangement between research and development agencies and military departments.

Mr. SCHERER. Did this paper you are talking about now, this second paper, is that the one that you wrote?

Mr. WHILLDIN. That is right, sir—which never——

Mr. SCHERER. That is the one from which the quotes are coming?

Mr. WHILLDIN. That is correct.

Mr. SCHERER. Is that full report of yours, the staff study, available?

Mr. WHILLDIN. What is that, sir?

Mr. SCHERER. Is that full report available from which these excerpts are taken?

Mr. WHILLDIN. Counsel, I believe, has it.

Mr. SCHERER. You headed that staff study?

Mr. WHILLDIN. I wrote the staff study, sir.

Mr. SCHERER. You wrote the staff study?

Mr. WHILLDIN. Yes, sir.

Mr. SCHERER. You are a civilian employee of the Army, Department of Defense?

Mr. WHILLDIN. Yes, sir.

Mr. SCHERER. When did you say you came to the Government, during what year?

Mr. WHILLDIN. I came in December 1942, in the Army, in the military service. I went out of the military service in 1946, I believe.

Mr. SCHERER. You were away from Government then between 1946 and 1952?

Mr. WHILLDIN. No, sir; I went back to the Pennsylvania Railroad approximately in 1947 and returned to the Government in the early part of 1948, I believe.

Mr. SCHERER. 1948?

You have been with the Government steadily since 1948 then?

Mr. WHILLDIN. I believe that is the date, sir.

Mr. SCHERER. Now before we get away from this staff study, evidently it was blocked some place along the line, that is what you are trying to tell us, aren't you?

Mr. WHILLDIN. Yes, sir.

Mr. SCHERER. Now who was it that blocked it?

Mr. WHILLDIN. I honestly don't know. It went to the executive officer, several times. The problem I think was in the writing of it. I don't think there was any feeling that it was wrong. I think the feeling was that it was a good paper but it was a matter I believe more of format than anything else.

Mr. SCHERER. How far above you did it get? Without giving names, how far above you did it get?

Mr. WHILLDIN. Unofficially, sir, it got to the Secretary of Defense's office.

Mr. SCHERER. Unofficially?

Mr. WHILLDIN. Unofficially; yes, sir. I might straighten that one out, sir. There had been a meeting, I don't remember the dates, there had been a meeting between transportation people of the Army, Navy, Air Force, and Marine Corps, which started that staff study. We had discussed the high and wide problems of all four services and we had invited to that particular meeting representatives of the Secretary of Defense. That was again an unofficial meeting.

Mr. SCHERER. What year is this now, approximately?

Mr. WHILLDIN. I don't know, sir; I would say it was about 1954, somewhere around in there, either 1953 or 1954.

Mr. MAY. Mr. Whilldin, this problem was resolved by a directive later on, was it not?

Mr. WHILLDIN. Yes, sir; it was.

Mr. MAY. The point we were attempting to establish, this was the thinking within the Transportation Corps in 1955?

Mr. WHILLDIN. It was the thinking within the Department of Defense, I would say, Army, Navy, and Air Force.

Mr. MAY. They did realize that there was a problem in transporting this oversize equipment and the vertical clearance structures on the highways that contributed to the problem.

Mr. SCHERER. As I remember the testimony from the other day, somebody testified from the Department of Defense that after the geometric standards were adopted in 1956, in which the Department of Defense did not participate, that subsequent to the adoption of these standards, there was a survey made in the Department of Defense, a survey made by the Navy, by the Army, by the Air Force and, as a result of that survey, a directive was issued in which Defense said, "We agree that 14 feet clearance is sufficient."

Mr. WHILLDIN. I can't answer that question, sir, I don't know.

Mr. SCHERER. You know that happened though, don't you?

Mr. WHILLDIN. I know it now, sir, but I didn't know it then.

Mr. WRIGHT. Mr. Chairman, may I inquire?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. I would like to inquire for clarification. You mentioned a paper which was signed by General Heileman.

Mr. WHILLDIN. Right.

Mr. WRIGHT. Are you referring to the 1952 paper or the one in 1955?

Mr. WHILLDIN. I believe it was 1952, a staff study very much like this one.

Mr. WRIGHT. So the problem was one that had come under the surveillance of the appropriate officials in the Department of the Army and Department of Defense that early?

Mr. WHILLDIN. That was primarily on rail, sir, it was not on highway. You see, a lot of the traffic during the war was on the railroads, especially heavy and high-wide items. We didn't have the trucking industry that we have today. So that the—well, going back—naturally, I was from the railroad, so that the problem to me was very serious on the railroads. So that first one was absolutely a railroad directive, sir.

Mr. WRIGHT. Now in 1955, when you prepared this paper which unofficially reached the Office of the Secretary of Defense——

Mr. WHILLDIN. Well, it did, sir, and let me clarify that. The two gentlemen that attended, again, the unofficial meeting that we had discussing the problem, asked for a paper, if we could get one out, and in the clearance matter, it is a very hard problem to get one out. The thinking primarily——

Mr. SCHERER. I don't understand that.

Mr. WHILLDIN. All right, sir.

Mr. SCHERER. In the clearance, you say it is very hard to get one out?

Mr. WHILLDIN. It is very hard to have people understand, sir, in peacetime years, well, it isn't important until someone of importance has a large item, let's say, then it becomes very important. But generally speaking the peacetime use of clearances is not considered too important.

When you get into the changing of, well, bridge heights and tunnels and various other things, considering a war, that is a hard problem to make people understand. We are trying to correct things in peace to prepare for war and it is a very hard job to sell that to anyone.

Mr. WRIGHT. Back to my question, in 1955, this paper which unofficially reached the Secretary of Defense, was one in which you were pointing out that there were in stock and in the process of development thousands of items of oversized dimensions which might give us trouble in an effort to transport them.

Mr. WHILLDIN. That is correct, sir.

Mr. WRIGHT. Were you referring in that paper exclusively to the railroads or were you referring both to rail and highway transportation?

Mr. WHILLDIN. Actually, sir, I was talking about all modes of transportation, rail, highway, water, and air.

Mr. WRIGHT. And in 1955 there were several thousand items, both in inventory and in the process of development which would give us trouble moving them because of their outsize dimensions either by highway or by rail; is that correct?

Mr. WHILLDIN. Partially so. It was not only size but weight. You have to take both of them into consideration. It would also be the movement by air, water, rail, and highway. It was all four of them.

Mr. WRIGHT. But in consideration of all of these avenues of movement, there were at that time in inventory and in process of development several thousand items which it was anticipated would give us trouble?

Mr. WHILLDIN. I would say so, yes, sir.

Mr. WRIGHT. We would have trouble moving them by any available means?

Mr. WHILLDIN. Not necessarily, sir. That again comes back to what we desire to see in time of war. The feeling of the Chief of Transportation, I am sure, and a lot of us that are in this particular field, is that we use all modes of transportation and not any one of them. So that your thousands might apply very well to air, whether we have the cargo aircraft to take it, it could apply to water, if we had to depend we will say on the ships booms and not shore cranes to lift it on, consequently, there we are limited say to the capacity of the boom.

On rail, of course, you have the same story on bridges and tunnels and on the highways you know the problem, I think.

Mr. WRIGHT. I don't want to get ahead of the story, but you are a man with considerable background in rail clearances.

Mr. WHILLDIN. That is correct, sir.

Mr. WRIGHT. There are items that we have been discussing in the last several days which have given us cause for concern as to whether we can move them over the highways. Could those items be moved by rail?

Mr. WHILLDIN. Some of them could, sir, not all.

Mr. WRIGHT. Do we not have an additional problem with rail transportation of lateral clearances as well as vertical clearances?

Mr. WHILLDIN. Yes, sir; you have that on most all forms of transportation.

Mr. WRIGHT. There has been some talk to the effect that where we have trouble moving military items by highway, well, there is no problem, just put them on the railroads. Does this, in your mind, present a quick and easy solution?

Mr. WHILLDIN. I don't think so, sir. I believe—maybe it is a personal opinion—but I believe that all forms again should be used for that. There are items which are wide, we will say, beyond the capabilities of the railroads.

In that particular case a highway can do it perhaps where the railroad could not. It depends on the location. If the location is, we will say, out in the Middle West or out west of the Mississippi, conditions out there are certainly a little different than they are in the industrial areas and in the mountain regions, so it is a—I don't know how to put it, sir, except that you do find objects which aren't actually too wide for the rail. They may be too high for them. In other cases the rail can take them. It depends on the location and destination.

Mr. WRIGHT. You have to tailor make your solution to the problem?

Mr. WHILLDIN. That is correct, sir.

Mr. WRIGHT. Now on vertical clearances, what is the minimum vertical clearance for rail transportation throughout the United States?

Mr. WHILLDIN. That is a hard one to answer, sir, because there is no limit so long as you can hold it on a car. It depends again on the location. Actually in this, and this may sound strange for this particular meeting, but if the Washington Monument could be loaded on a rail car you could move it for a short distance.

Mr. WRIGHT. I am talking in terms of feet. How many feet would constitute the minimum vertical clearance for the rail transportation network throughout the country?

Mr. WHILLDIN. Mr. Wright, that is a very hard question to answer because the condition on the railroad is exactly the same as it is on the highways. We will say this, that every railroad has probably a different height. Again it depends on where you are going.

Mr. WRIGHT. What would be the lowest height existing on the main trunkline railroads?

Mr. WHILLDIN. Offhand I can't say, sir, but it probably would be under a trolley wire and just as a guess, I can't give you an accurate statement. I would imagine about 15 feet.

Mr. WRIGHT. About 15 feet?

Mr. WHILLDIN. Wait a minute, the height, about 15 feet, 4.

Mr. WRIGHT. About 15 feet and 4 inches?

Mr. WHILLDIN. That is correct, but that is from the top of the rail and not from the car. Now as far as the overall height on the rail, I know that we have taken items that were 19, approximately 19 feet, 2, 19 feet, 6 inches in height from the rail, but again it is the location.

Mr. WRIGHT. From the rail, now 19 feet in height from the rail?

Mr. WHILLDIN. For 19 feet, you would have to reduce the car that you put it on. For instance, the 19-foot shipment, as I remember it, was on a pressed center car or a well car, in which the item could be dropped down within about 6 inches of the rail.

Mr. WRIGHT. Then we have to move the flat bed within the rail, within the wheels, don't we?

Mr. WHILLDIN. In a well hold car, that is true; it goes between the side sills of the car, which is nothing more than a well on a deck of a car. So in that particular case the item can be dropped down so it is near the truck but clears the grade crossings.

Mr. WRIGHT. When you do that, this limits the lateral dimensions?

Mr. WHILLDIN. It does very much. That would be for a—we will call it a high narrow load.

Mr. WRIGHT. You could conceivably, assuming the lateral dimensions were narrow enough, transport an item as tall as 19 feet?

Mr. WHILLDIN. In a certain location, sir. Again, you can't do that all over the country. Once you get into mountain areas or into industrial areas where you are limited by, we will say, low structures, then, naturally, you can't take that height. In that particular case, I would say the highways would have to take it.

Mr. WRIGHT. As a rule of thumb, what would you say would be the minimum vertical dimensions of an article to be conveyed by rail that we could safely say could be transported over most of the railroads of the country?

Mr. WHILLDIN. I am afraid I can't answer, sir.

Mr. WRIGHT. How high is the average flat bed off the rail?

Mr. WHILLDIN. The commercial cars will run in flatcars from approximately 3 foot 5 to 4 foot 2.

Mr. WRIGHT. Three foot five to four foot two?

Mr. WHILLDIN. That is correct.

Mr. WRIGHT. So that anything we transport on a flatcar must take into account the subtraction of feet 5 inches to 4 feet 2 inches?

Mr. WHILLDIN. That is right.

Mr. WRIGHT. From this 19 feet that we have been talking about?

Mr. WHILLDIN. The 19 feet I gave you was a wing, I believe, of a plane, and in that particular case we did not use the flat type of car. We used, as I say, a well hold car with a depressed center. The higher the load gets, naturally, the lower the cargo on it should be.

In the case of width we are talking about, excessive width shipment which is not too high, there you would use the flatcars I spoke of, and probably the low flatcar, the 3 foot 5, which is certified to carry concentrated weight. So it varies.

Mr. WRIGHT. So that if we say there is a clearance available in some parts of the country of 19 feet above the rails, we must translate that for purposes of any commodity that has to be carried on a flatcar to somewhere between 14 feet 10 inches and 15 feet 7 inches. Is that essentially correct?

Mr. WHILLDIN. Will you repeat that, sir.

Mr. WRIGHT. I believe you have said that the flatcar is somewhere between 3 feet 5 inches and 4 feet 2 inches off the rail.

Mr. WHILLDIN. Correct.

Mr. WRIGHT. Therefore, using the illustration you mentioned a moment ago of the possibility of transporting commodities in certain parts of the country at a height as great as 19 feet off the rail, if we are to consider commodities that must ride on a flatcar, then we would reduce that 19 feet by somewhere between 3 feet 5 inches and 4 feet 2 inches which would give us an outside dimension in height for the commodity itself of somewhere between 14 feet 10 inches and 15 feet 7 inches?

Mr. WHILLDIN. That is correct.

Mr. WRIGHT. That is the biggest you could hope to transport——

Mr. WHILLDIN. I wouldn't say the biggest. I remember that particular shipment. But I could imagine in the wide open country where you do not have bridges or overhead wires or anything like that, you could go higher.

Mr. WRIGHT. For a certain distance in a certain part of the country?

Mr. WHILLDIN. For a short distance, yes, sir.

Mr. WRIGHT. But for cross-country shipment you couldn't do it, sir. You have no rule of thumb for cross-country shipments?

Mr. WHILLDIN. The only one I can give you, sir, and the largest I can remember from the east coast to west coast was 17 foot 6 inches, and I would imagine, although I am not too sure, that was on a 3 foot 5 car.

Mr. WRIGHT. That is 17 feet 6 inches above the rail?

Mr. WHILLDIN. That is right, and that is only one railroad in the United States.

Mr. WRIGHT. Could you, for instance, take a 19-foot item by the Pennsylvania Railroad from Washington to New York?

Mr. WHILLDIN. No, sir, you could not.

Mr. WRIGHT. Thank you.

Mr. JONES. Mr. Chairman?

Mr. BLATNIK. Mr. Jones.

Mr. JONES. Under the 1946 Highway Act, as I recall it there, the whole assumption of that act was based upon the consultation of the Bureau of Public Roads, the State highway departments, and the Department of Defense.

In their promulgation of the designation of the highway, the general specifications of its construction, did the Department of Defense collaborate in those early preliminary meetings?

Mr. SCHERER. You said 1946 Highway Act. Do you mean 1956?

Mr. JONES. The 1946 act was the first designation, if my recollection is right. Well, under the 1956 act, I think the highway, well the 1944 act then——

Mr. WHILLDIN. What was your question, sir?

Mr. JONES. Did the Department of Defense participate in the discussions of the designation of Interstate Highway in 1944?

Mr. WHILLDIN. I believe you will have to ask Mr. Chacey that question; I do not know.

Mr. JONES. Has there been any discussions in the last 6 months with your agency of the Department of Defense with the Bureau of Public Roads with respect——

Mr. WHILLDIN. Not with our office, no, sir. That is not with the transportability office—correction on that.

Mr. JONES. Now the various missiles that are now being produced by the various agencies, are you capable of transporting those missiles by rail? Can you transport them? Can you transport the ATLAS?

Mr. WHILLDIN. I believe there is a possibility of doing that, again, in the West. I do not believe that could be transported in the East, that is, the Middle West, not the far West.

Mr. JONES. The JUPITER?

Mr. WHILLDIN. The JUPITER?

Mr. JONES. Yes, sir.

Mr. WHILLDIN. I believe it could be transported if it were not for sensitivity. It is not size and weight but a sensitive problem.

Mr. JONES. And the TITAN, could you transport it?

Mr. WHILLDIN. That I don't know, sir; I don't know enough about that particular missile.

Mr. JONES. What about the SATURN that is now——

Mr. WHILLDIN. The SATURN, sir, as it exists, the last we have heard of it, water transportation is about the only form there, I believe, that could be used.

Mr. JONES. And SATURN could not be transported over the highways, could it?

Mr. WHILLDIN. Well, I think there might be a possibility of it, sir, if again, you would not go under a bridge.

Mr. JONES. If you can't get under a bridge you can't get very far?

Mr. WHILLDIN. I don't know, you may be able to detour some of them on short distances, not long distances.

In long distance, I would say no, on short distance you might be able to.

Mr. JONES. For general deployment purposes then, you could not resort to highway travel and place them strategically over the United States?

Mr. WHILLDIN. No, sir.

Mr. JONES. That is all.

Mr. MAY. Mr. Whilldin, just briefly, will you explain the difficulties involved in shipments of oversized items on the railroad? I am thinking now of speed and width and special routing?

Mr. WHILLDIN. Well, in that, sir, we will have to do the same thing. There are certain railroads which are more restricted than others. Those in the East, with the exception of perhaps, well, the Erie, I don't like to name names here, but there are about two railroads in the East which have very good clearances.

On those where the intertrack distance is close, that would restrict them to probably 25 miles an hour on one particular carrier, no passing of trains or cars on adjacent tracks and there is a possibility of daylight only. I would imagine that there are quite a few railroads when that exists.

Mr. MAY. It might cause the adjacent tracks to be cleared of all other traffic?

Mr. WHILLDIN. That is correct.

Mr. MAY. Mr. Chairman, we wanted Mr. Whilldin to establish two points: One, the difficulty in moving some of these items over the railroad, and, secondly, the difficulty in moving oversize items via all modes of transportation—railroad, highway, air or water—was known and seriously concerned the Chief of Transportation's office in 1955 prior to the adoption of the standards in 1956.

Mr. BLATNIK. Mr. Scherer?

Mr. SCHERER. In your 1955 paper, that we have been talking about, did you make any recommendation as to vertical clearance?

Mr. WHILLDIN. No, sir, I did not.

Mr. SCHERER. Were you called upon to make a recommendation after the adoption of the geometric standards following the passage of the 1956 Highway Act?

Mr. WHILLDIN. No, sir.

Mr. SCHERER. Do you know who made those recommendations for the Department of Defense?

Mr. WHILLDIN. No, sir; I do not.

Mr. SCHERER. Should you have been consulted?

Mr. WHILLDIN. I don't believe so, sir. It is a case that we in the transportability must live with whatever is established.

Mr. SCHERER. Were the proper parties in the Department of Defense consulted before the Department of Defense approved the 14-foot height as had been adopted about a year before by the Bureau of Public Roads and the Association of State Highway Officials?

Mr. WHILLDIN. I can't answer, sir.

Mr. SCHERER. Now the oversized items that we have been talking about, they constitute what percentage of the total amount of military equipment and materiel that is shipped?

Mr. WHILLDIN. That is something we would have to check. I do not know.

Mr. SCHERER. Would it be an infinitesimal part of the total amount?

Mr. WHILLDIN. It would be a small part, sir.

Mr. SCHERER. It would be a still smaller part of the total amount of materiel, commercial and military, shapped over our highways and railroads each year, would it not?

Mr. WHILLDIN. I would imagine it would be.

Mr. SCHERER. It seems most people are agreed that 17-foot clearance is going to take care of our needs. What do you think about that now? Do you think that is high enough?

Mr. WHILLDIN. I think that is a very hard question to answer.

Mr. SCHERER. I agree with you; I think it is a hard question to answer. Isn't it a fact that if we build them 17 feet today, that maybe the Defense Department is going to come out next year with equipment that will require 20-foot clearance—some weapons will require 20-foot clearance?

Mr. WHILLDIN. That could well be.

Mr. SCHERER. Will not private industry and commercial trucking then find a way to carry something or want to carry something at least that requires a clearance of 18, 19, and 20 feet? Mustn't there be some limitation placed upon these clearances and these geometric dimensions for our highways and railroads, otherwise somebody is always going to find something bigger to carry?

Mr. WHILLDIN. I think, sir, there is an answer to that story and you will find it, I believe, again in that staff study.

There are two points and recommendations, if I remember them. One is, we will say, to control, if it is possible at all, the sizes and weights of items. The other side of it—and there is always a second—is to control, if you can, the height or the opening that the item must go through. So the building, we will say, of a small tube, is a good example of it——

Mr. SCHERER. A what?

Mr. WHILLDIN. A small radio tube, they are getting very, very small, but the machinery to build that tube may have to be quite large. That is the thing you are up against, I believe, in the commercial world. There is no hold on that one.

Now on the military, we would like to see it, but I do not think we ever will. We have transformers which are large and getting larger. There are certain items of military equipment you could not reduce if you wanted to and that is solid pieces, let's say that.

Mr. SCHERER. Now, suppose today, we Members of the House who have listened to this testimony, come to the conclusion from the testimony of you experts, and that is all we have to go by, that 17 feet or 18 feet is sufficient.

How do we know that there is not some white paper lying around some place that says we ought to build to 20 feet?

Mr. WHILLDIN. That could very well be, sir. I hope this never happens, but, if I have to go back as clearance officer again for the Army in another, we will call it war, I would like to see no bridges, no tunnels, no nothing, it would be a wide open system.

Now the reason for that is this: that in order to win a war, you have to start fast. Transportationwise, if you get there too late, you can't win a war, sir. So, by starting out fast and not having to slow down, you can win. If, on the other hand it is a slow start, that will continue right straight through.

Mr. SCHERER. They tell me we don't need to worry about slow starts now, because I am told a nuclear war is going to be over in 2 days and all of the movements in advance of an attack will be moderately slow, because we do not know when it is coming and we don't need to move anything after the attack comes.

Mr. WRIGHT. I don't think—you are saying that in jest; you are not saying this seriously?

Mr. SCHERER. What?

Mr. WRIGHT. We don't have to be concerned with ability for rapid movement? I think this is a reductio ad absurdum type line of inquiry.

Mr. SCHERER. I am only referring to what an expert told me, I don't know. I am looking for light, that is all. I just talked to some man who is supposed to know. He said that this thing will be over in a day or two. We won't have to worry about highway movements of oversize objects after it starts. It will be too late.

Mr. BLATNIK. Mr. Robison?

Mr. ROBISON. Sir, would not the question of whether or not the railroads can transport these outsized items depend, in great part, on the engineering concept adopted by the contractor and the particular branch of the service for which the items are being produced determining whether or not these items are to be shipped assembled or disassembled?

Mr. WHILLDIN. That is partially true, sir.

Mr. ROBISON. Now can you tell me whether or not you know if the railroads have been transporting in a disassembled condition the Redstone missile, for instance?

Mr. WHILLDIN. The Redstone missile was shipped, that is the shell of the missile, was shipped by rail.

Mr. ROBISON. Isn't that shipped in three segments?

Mr. WHILLDIN. It normally is; yes, sir.

Mr. ROBISON. How about the Polaris missile, if that is or has been shipped by rail?

Mr. WHILLDIN. Only from hearsay on that one. I believe it has.

Mr. ROBISON. My understanding is it has been shipped in a disassembled shape. How about the future weapons of tomorrow that we mentioned here the other day, including the so-called Minuteman, if that is its proper title, and perhaps you cannot even tell me about it, I don't know, but I have in front of me a page out of Railway Age magazine of September 14, 1959, showing a missile defense system using railroad cars as mobile launching platforms which proposal apparently was shown at an Air Force Association meeting in Florida last fall.

Have you any thoughts about this as a partial answer to our present problem?

Mr. WHILLDIN. Well, I would prefer, sir, that you ask the Air Force about that particular item.

M. SCHERER. I think you are right, that is in keeping with the new theory that we must keep these launching sites movable.

Mr. ROBISON. Well, quoting from the article, it does say the mobility of the 218,500-mile route of the American railroad system would make this system almost impossible for an enemy to wipe out in a sneak attack.

I suppose this is the theory. Well, would it not be your opinion that as these missiles of the future are developed, with solid fuel propellants instead of liquid fuel propellants, that they will become, I think the Pentagon uses the word "more sophisticated," which to my mind means more streamlined, more readily mobile?

Mr. WHILLDIN. That could be from a military sense, sir, but then I believe in the solid missiles, you find that increases the weight.

It may reduce the size. However, I do not think that statement could be exactly true from the standpoint of space vehicles and of course, we may not move those in war, I don't know, but we certainly may move them before long and if they are not, well, it is a good possibility that it could not be shipped completely assembled and would have to be disassembled. But again, I think it is anybody's guess what the size of that thing would be.

Mr. SCHERER. What height do you recommend now, that is what we are going to try to decide here. Back in 1955, you had some idea that it should be over 14 feet and somebody up the line did not go along with you. I want to try to be halfway right now.

Mr. WHILLDIN. I am afraid I would have to——

Mr. SCHERER. If the experts do not know we surely don't know?

Mr. WHILLDIN. Well, the only statement I could say, it is personal opinion again, that if the clearances are too low, and this is not an answer to you I don't think, if they are too low, and the trend on some of these items gets a little too big, then we are licked.

Mr. SCHERER. Won't you go along with me, that no matter how high you make these clearances, unless we have what you would like, no limitation clearances at all, and I can't visualize that, somebody will want to build something bigger to carry on our highways.

Mr. WHILLDIN. I think that is generally true unless it can be controlled, sir.

Mr. SCHERER. That is what we are trying to do now, find some way to control these things, if possible.

Mr. BLATNIK. If there are no further questions—Mr. Wright?

Mr. WRIGHT. May I ask just these few questions?

The line of inquiry has been established, first of all, concerning the relative volume of the materials which you are called upon to transport which are oversized and I believe you answered a moment ago that it is a relatively small percentage of the total amount of goods that you transport.

Would you say that it is unimportant because of its relative smallness as a percentage of the total amount of goods?

Mr. WHILLDIN. I would not, sir, I would say it is very important.

Mr. WRIGHT. Therefore, the fact that only a small percentage of the proposed shipments are too large for our standard modes of transportation, does not render this problem unimportant, does it?

Mr. WHILLDIN. No, sir; it certainly does not.

Mr. WRIGHT. Obviously we ship more nails than we would ship missiles, but that does not mean that it is not important for us to determine the means of shipping missiles or other oversized pieces of hardware across the country, does it?

Mr. WHILLDIN. No, sir; it does not.

Mr. WRIGHT. Now the second line of questioning is in——

Mr. SCHERER. Will the gentleman yield, because evidently he drew that inference from the question I asked. I did not want you to draw that inference, that was not my purpose in asking the question. I must explain my purpose. My purpose is to show that it is an infinitesimal part of the total shipments across these highways and we might do it by air some day.

Mr. WRIGHT. We might inquire when the Air Force gets here about that, maybe we can. I don't know.

Mr. SCHERER. Maybe I am wrong, but that is the reason I asked the question, not that I thought it was unimportant.

Mr. WRIGHT. In other words, regardless of what percentage it may be of the total overall shipments that are conveyed by rail and highway and other methods of transportation, when we need them where we need them it is pretty important, isn't it?

Mr. WHILLDIN. That is very true, sir.

Mr. WRIGHT. Now the second thing involves this question of dismantling materials and sending them. I believe you anticipated that problem too in your 1955 paper wherein you said that in certain instances we could expedite a shipment by dismantling it and reassembling it at the other end of the line, but you went on to point out that it was not any good to us at all until it had been reassembled.

Mr. WHILLDIN. That is correct, sir.

Mr. WRIGHT. It is not the policy of the Department of the Army to send do-it-yourself tank kits?

Mr. WHILLDIN. No, sir. It is not the policy.

Mr. WRIGHT. It is not, all things being equal, desirable to send a commodity in a dismantled state to its final destination and rely upon the people on the ground there to be able to put it back together; is it?

Mr. WHILLDIN. Well, there is an exception there. I believe that in the missile field, sir, that missiles probably would be shipped disassembled and assembled at the site, but the item for combat use, or immediate combat use, if it were disassembled, it would be one that is easily disassembled and reassembled, that is, in shortness of time.

Mr. WRIGHT. I have heard some stories about a shipment of tanks which were said to have been shipped to Korea during the Korean war, arriving in a disassembled state and therefore never actually capable of being put into use. Are you familiar with that?

Mr. WHILLDIN. I am from hearsay, sir; yes, sir. The tanks were shipped from the middle of the United States to the west coast and in order to expedite the tanks, the transportation officer at the installation thought that he would have to reduce it and did. He, I believe, took off the tracks, the driving pocket, and the sand shield. When it got to the west coast, it was loaded directly aboard ship and sent to Korea.

As far as I know, those 50 were never used but there were another 100 sent. Those particular 100 were not disassembled and the railroads set up two special trains and ran them out at approximately the same speed. They, I believe, could have been used. They were up to the northern part of Korea when we withdrew.

Mr. WRIGHT. Fifty had arrived earlier than the 100?

Mr. WHILLDIN. Yes, sir.

Mr. WRIGHT. They were there at a time when we could have used them had they been in one piece?

Mr. WHILLDIN. That is correct.

Mr. WRIGHT. They were not in one piece and therefore, so far as you know, were not used?

Mr. WHILLDIN. As far as I know, the reports I have heard, they were still in the port when the war was over.

Mr. WRIGHT. Now there is just one more question and then I am going to be through, Mr. Chairman. Thank you for your patience with my questions.

Section 2 of the act of 1948 directed the Commissioner of Public Roads to invite the cooperation and suggestions of the Secretary of Defense and National Security Resources Board as to their indicated or potential needs for improved highways for national defense. I believe your chief was designated in 1953 to maintain this liaison with the Bureau of Public Roads and other agencies. Vertical clearances were at that time known to be a problem.

I am just wondering, why wasn't the Department of Defense ready with a firm recommendation when the act of 1956 was passed?

Mr. WHILLDIN. Well, again, Mr. Wright, that is a very hard decision to make. I can't speak for my chief at all, but I would say that, just as the gentleman over here asked me, it is hard to determine what height is right. The 14 feet might sound perfectly normal. On the other hand, there are indications in a way that certain items may grow. They have been growing since World War II and there are some of them that haven't stopped growing, so consequently, the 14 feet may have sounded absolutely right at the time.

Again, 16, 17, 20, whatever the figure might be would sound better and certainly again, if I were routing that kind of traffic during the war, I would certainly like to see the best we can get, so it is purely a case of living with what the carriers or the interstate people give us.

Mr. WRIGHT. To your knowledge, was your chief consulted immediately following the act of 1956 in the establishment of the standards?

Mr. WHILLDIN. I really don't know, sir. I didn't work for him at that particular time.

Mr. WRIGHT. Thank you very much.

Mr. BLATNIK. Thank you very much, Mr. Whilldin.

Mr. COOK. Mr. Chairman, one question, please.

Mr. BLATNIK. Mr. Cook.

Mr. COOK. Mr. Whilldin, as I understand the Highway Act, it requires those responsible for setting these limits to do so on the basis of the traffic for 1975; isn't that your understanding?

Mr. WHILLDIN. Again, I think you will have to ask Mr. Chacey that question. I don't know.

Mr. COOK. If I tell you that is the fact, isn't it true that there was ample evidence in the Defense Department in 1955 and 1956 and later, when the 14-foot level was set, that would have indicated these modern warfare machineries were growing at a rate that, certainly by 1975, 14 feet would be much too low on our Interstate Highway System?

Mr. WHILLDIN. I am not too sure of that question, sir. We in the Army have attempted in working with the research and development people to get the combat type of equipment and combat support type of equipment small. We have had some success and other places we have not. Now, there are other items which are not, well, we'll say

they are more the missile type of thing, which I don't believe you would know and I know I don't, whether the item is going to grow or be smaller. But I have an idea from the past that it might be bigger. The missile systems are not only the missile itself but the trailers and various other items that go to make up that particular system.

Certainly under new concepts the supporting equipment might become bigger. In fact, I think there is a trend toward that already. Just how important that is, I don't know. Now that could very well turn right around and go in other directions, so I should say it is awfully hard to determine whether someone was right when the 14 feet was thought of for 1975 or whether somebody thinking in 1965 could hit what it should be in 1975. It is very hard to see.

Mr. COOK. There was testimony offered here that there were many pictures of Army equipment, guns, that were too high for the 14-foot level at the time the 14-foot level was established.

Mr. WHILLDIN. That is true; but in the case of any transportation system, whether it is rail or highway—I don't know too much about water except I would imagine it might happen there—there are methods of detouring. Now if going back to a railroad, and staying away from the highway for a minute, if the railroads have set a certain height, which would stop the detouring that is possible, we would be in an awful shape. Now that could happen, I think, as far as the highways are concerned.

If the country were dotted with enough small heights around the country, which would stop the alternate routing, there you would have troubles, sir. On the other hand, if they are higher, certainly you can get around the smaller bridges. Does that answer you?

Mr. COOK. Not exactly. As I understand your testimony then, the Defense Department was in effect gambling that Armed Forces equipment was going to take a trend toward being smaller than higher in the next 15 years. Is that correct?

Mr. WHILLDIN. I can't say that; no, sir.

Mr. COOK. What I am getting at, there is a chart here which we don't seem to be bringing out in a lot of the witness' questions. 1975 is the target date, not 1956 or 1957 or 1960, and I find it hard to believe that the experts in the Defense Department sincerely felt that even though they had abundance of equipment which couldn't get under a 14-foot bridge when they made this requirement of 14 feet, that things were going to get smaller during the next 15 years. That seems incredible.

Mr. WHILLDIN. Well, it may seem that way, sir, but that is part of the trouble we all have; I believe.

Mr. COOK. Why didn't we recommend a higher bridge than 14 feet?

Mr. WHILLDIN. Well, again, that question has been asked me, what height would you go? I don't know. I have been handling clearances, as you know, for quite a long time. I couldn't tell you where to go.

Mr. COOK. What would you recommend based on 1975?

Mr. WHILLDIN. I wouldn't recommend, sir. I wouldn't know. I don't know that any more than I would say that the gentleman in here would know what is going to happen in the space age.

Mr. COOK. As a clearance officer though, shouldn't you have some recommendations?

Mr. WHILLDIN. No; I don't.

Mr. COOK. How are we ever going to ascertain from the experts, as Mr. Scherer says, how we should gage this national defense highway when the experts don't have an opinion?

Mr. WHILLDIN. At the present time, if you use that, and Mr. Chacey probably can give you a much better story on it than I can, I think you will find that in the 16 feet it takes, I would say, probably the majority of the items which are in the system today. Now the question is, What are we talking about; today or tomorrow?

Mr. COOK. We are talking about 1975.

Mr. WHILLDIN. All right; now the item that is in the system today and this is 1960, will probably be in the system for another 10 or 15 years. So, I can't answer you as far as that height is concerned. I admit that I am a clearance officer but I can't answer that.

Mr. BLATNIK. Mr. Chacey is the next witness. Thank you, Mr. Whilldin. We will call again on Mr. Chacey of the Bureau of Public Roads. Mr. Siegle and Mr. Erickson, are these gentleman here? Mr. Erickson and Mr. Siegle, will you please accompany Mr. Chacey?

STATEMENTS OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY; ERIC L. ERICKSON, CHIEF, BRIDGE DIVISION, OFFICE OF ENGINEERING, BUREAU OF PUBLIC ROADS; AND ARTHUR G. SIEGLE, CHIEF, DIVISION OF DEFENSE PLANS AND OPERATIONS, BUREAU OF PUBLIC ROADS—Resumed

Mr. BLATNIK. Are you ready to proceed, Mr. Chacey?

Mr. CHACEY. Yes, sir.

Mr. BLATNIK. Mr. May?

Mr. MAY. Mr. Chairman, at Congressman Scherer's request, we are including these items as an exhibit at this time: The letter from Mr. Baldock will be exhibit 1–A. The Navy's answer to General Yount's letter of January 1957, which is dated February 7, 1957, will be made 2–A. The answer from the Ordnance Department, April of 1957, will be 2–B. The answer from the Air Force, dated April 5, 1957, will be 2–C.

Mr. BLATNIK. Without objection, so ordered.

(Previously inserted at pp. 16, 18, 19, and 20.)

Mr. MAY. Mr. Chairman, we interrupted the chronological story of the events leading to the recent change in standards to hear Mr. Stevens this morning and Mr. Whilldin this afternoon.

When we last spoke with the three gentlemen before us, we had discussed the May 29, 1959, meeting between General Besson and Mr. Tallamy, at which the vertical clearance problem was discussed.

Mr. Chacey, we did not make mention of the fact that on February 26, 1959, you discussed this problem with Mr. C. T. Milne, Deputy Assistant Secretary of Defense, Supply and Logistics, Mr. McGuire's assistant, and Mr. Earl B. Smith, Director of Transportation Policy, Office of Assistant Secretary of Defense, Supply and Logistics.

What did you tell those gentlemen at that time, February of 1959, Mr. Chacey?

Mr. CHACEY. Mr. Chairman, I have a brief qualification I should like to insert in the record with respect to a map which was introduced a few days ago.

Mr. MAY. Could we wait just a moment? Could you answer that question and then make your qualifications?

Mr. CHACEY. Yes, sir. This was an informal briefing that was given to Mr. Milne and Mr. Smith covering the Federal aid to highways program, and many matters which were of interest to the Department of Defense. It was a general briefing. Included in this briefing was reference to this vertical clearance problem.

Mr. MAY. So Mr. Milne was aware of the vertical clearance problem as of this particular date, February 26, 1959?

Mr. CHACEY. He was aware of the fact it was a problem being given consideration with the Department of Defense.

Mr. MAY. You have some qualifications?

Mr. CHACEY. Deputy Assistant Secretary of Defense for Supply and Logistics. I don't know whether it was Tuesday or Wednesday there was introduced into the record a little sketch map showing a rail clearance map for the T–43 and T–48 tanks and items approximating 12 feet, no inches wide. This map represented the official position of the majority of the railroads at the time it was prepared in 1952. However, since that date, many of the railroads have taken action to either eliminate the physical restriction or adjust their operating procedures so that they will now accept, on certain of their lines, movement of this dimension. That is all.

Mr. MAY. The general problem of moving oversized pieces of equipment on the railroad remains, Mr. Chacey?

Mr. CHACEY. There remain problems with respect to the movement of these items on railroads. Yes.

Mr. MAY. Mr. Chacey, after the May 29, 1959, meeting between General Besson and Mr. Tallamy, what did General Besson instruct you to do?

Mr. CHACEY. I testified on that the other day. I think one of the things he requested me to do was to prepare an appropriate letter to General Schriever, Department of the Air Force, and General Medaris, Army Ordnance Missile Command.

He also suggested that we develop further a map that we had used showing the freeway systems in the State of California and the Interstate System.

He also suggested that we try to work out something with the Commissioner of Public Roads to better illustrate or identify the problems that we might experience in the movement of items around structures on the Interstate System.

I believe that those are the three principal things.

Mr. MAY. I would like to cover those just briefly.

The map of California was published, or you had developed the map of California previously and used it in the May meeting.

Mr. CHACEY. We had used the map which was the official publication of the State of California showing their freeway system.

Mr. MAY. Which indicated, as the freeway system was built, it would cause more restrictions, so that eventually very few oversize items could be moved around the State of California. Is that correct?

Mr. CHACEY. That is correct.

Mr. MAY. Except as the Interstate System was able to accommodate them?

Mr. CHACEY. Well, the assumption was that, with the existing standards, the Interstate System and the supplementing freeway systems would all have the same vertical clearance standard.

Mr. MAY. You wrote to General Schriever and General Medaris on June 17, 1959?

Mr. CHACEY. General Besson's letter was dated June 17, 1959.

Mr. MAY. What did General Medaris reply?

Mr. CHACEY. Sir, do you wish me to read the entire letter?

Mr. MAY. No. Just in essence.

Mr. CHACEY. On July 2, 1959, General Medaris replied:

I cannot state that the limiting factors removed by an increase from 14-foot clearance to a 17-foot clearance will have general significance in the Army missile program.

Mr. MAY. This was at a time when the Army had lost jurisdiction over some of the larger missiles to the Air Force. Is that true?

Mr. CHACEY. They had—yes, sir. That is true.

Mr. MAY. So they were not concerned with large missiles, and so they were not concerned with the 14-foot vertical clearance.

Mr. CHACEY. That was the significance of the Army missile, or the words "Army missile program," I believe.

Mr. MAY. General Schriever's answer might be more significant. What did he reply? Would you read the entire letter? Mr. Chacey, I will read it to you and if I make an error, will you correct me?

Mr. CHACEY. All right.

Mr. MAY. It reads:

DEAR GENERAL BESSON: 1. Your letter of June 17, dealing with the problem of clearance restrictions on future defense highway systems, has been thoroughly reviewed by my staff and I fully concur with increasing the 14-foot limitation to 17 feet.

2. Although the trend on ballistic missile weapon systems appears to be toward smaller physical dimensions, there are certain present requirements which will need a 17-foot clearance. For example, the F–1 rocket engine, when loaded on a flatbed trailer, will easily exceed the 14-foot limitation.

3. The impact of development of propulsion systems in the one- five- ten-million pound range cannot be evaluated at this time. Present state of the art does not clearly indicate whether such propulsion systems will take the form of larger individual units or clusters of smaller units.

4. It appears that since it is virtually impossible to accurately visualize overall clearance requirements during the next 50-year period, a 17-foot clearance might benefit the Nation, especially in planning new underpass construction. Although forecasting is extremely difficult in this dynamic area, our staff is available for consultation with your Mr. Chacey with regard to the possible clearance problem. Basic missile planning is accomplished at Ballistic Missile Division, Inglewood, Calif. I would recommend that Mr. Chacey contact this headquarters to arrange for his trip to the west coast if it is your desire to obtain further detail.

So with this letter General Schriever concurred in the decision to raise the standard from 14 feet to 17 feet. Did you make that trip to the west coast, Mr. Chacey?

Mr. CHACEY. I did not, sir.

Mr. MAY. May we make this exhibit 28, Mr. Chairman?

Mr. BLATNIK. Without objection, it is so ordered.

(Exhibit 28 follows:)

EXHIBIT 28

HEADQUARTERS,
AIR RESEARCH AND DEVELOPMENT COMMAND,
U.S. AIR FORCE,
ANDREWS AIR FORCE BASE,
Washington, D.C., August 1, 1959.

Subject: Vertical clearance restrictions on defense highways.
To: Department of the Army (Maj. Gen. F. S. Besson, Jr.), Washington, D.C.

DEAR GENERAL BESSON: 1. Your letter of June 17, dealing with the problem of clearance restrictions on future defense highway systems, has been thoroughly reviewed by my staff and I fully concur with increasing the 14-foot limitation to 17 feet.

2. Although the trend on ballistic missile weapon systems appears to be toward smaller physical dimensions, there are certain present requirements which will need a 17-foot clearance. For example, the F–1 rocket engine, when loaded on a flatbed trailer, will easily exceed the 14-foot limitation.

3. The impact of development of propulsion systems in the 1-, 5-, 10-million pound range cannot be evaluated at this time. Present state of the art does not clearly indicate whether such propulsion systems will take the form of larger individual units or clusters of smaller units.

4. It appears that since it is virtually impossible to accurately visualize overall clearance requirements during the next 50-year period, a 17-foot clearance might benefit the Nation, especially in planning new underpass construction. Although forecasting is extremely difficult in this dynamic area, our staff is available for consultation with your Mr. Chacey with regard to the possible clearance problem. Basic missile planning is accomplished at Ballistic Missile Division, Inglewood, Calif. I would recommend that Mr. Chacey contact this headquarters to arrange for his trip to the west coast if it is your desire to obtain further detail.

Sincerely,

B. A. SCHRIEVER,
Lieutenant General, USAF,
Commander.

Mr. MAY. Mr. Chacey, I have here a memo from C. H. Perry, Acting Assistant Chief of Transportation, to the Honorable Ellis L. Armstrong, Commissioner of Public Roads, Department of Commerce, dated August 11, 1959, and I will read this.

Do you have a copy in front of you?

Mr. CHACEY. I do, sir.

Mr. MAY. It reads:

EXHIBIT 29

DEAR MR. ARMSTRONG: Reference is made to telephone conversation of this date between Mr. Siegle of your office and Lieutenant Colonel McCauley of this office concerning vertical clearance restrictions on the National System of Interstate and Defense Highways.

Attached for you information is copy of letter dated August 1, 1959, from Lt. Gen. B. A. Schriever, commander, Air Research and Development Command, to Maj. Gen. F. S. Besson, Jr., Chief of Transportation, on the subject cited above.

So with this letter there was forwarded to the Bureau of Public Roads, General Schriever's answer and his recommendation of increasing the vertical clearance to 17 feet.

Can we make that exhibit 29, Mr. Chairman?

Mr. BLATNIK. Without objection it is so ordered.

Mr. MAY. In August of 1959, General Besson, at the request of Congressman Fallon, forwarded a letter to the Congressman. Who composed that letter, Mr. Chacey?

Mr. CHACEY. I assisted in its composition.

Mr. SCHERER. What is the date of that letter?

Mr. MAY. August 7, 1959. I don't think we need to take the time to read the entire letter, but we might note—perhaps we had better read it. This was in 1959 and the vertical clearance standard was still 14 feet. I will read what you forwarded, or what General Besson forwarded to Congressman Fallon at that time.

EXHIBIT 30

DEAR MR. FALLON: This is in response to your request of August 6, 1959, for the current views of the Department of Defense on the importance of the National System of Interstate and Defense Highways.

Rather than review extensively the many aspects of highway needs for national defense, I should like to refer you to the testimony presented by Maj. Gen. Paul F. Yount on behalf of the Department of Defense in 1955, which is still valid. This letter will briefly expand that testimony to emphasize how the more important technological advances have affected these needs.

It is clear the Russian offensive capability has been increasing faster than anticipated. As a result, our vulnerability is growing, and this is reflected in the rapid evolution of new offensive and defensive concepts. There are four general defense concepts, namely: Active antiaircraft and antimissile defense, hardening of sites, dispersion, and mobility of defensive and retaliatory weapons.

All of these concepts require efficient transportation. However, greater dispersion and greater mobility in the United States can be attained only to the degree that our transportation facilities are capable of supporting them. While these needed transportation facilities include all modes of transportation, it is imperative that dispersion and mobility exploit fully the flexibility of highway transportation.

The speed with which these defense concepts are moving is illustrated by the technological advancement in missiles from the German V-2 of World War II to the present ICBM. With the potential that space vehicles have for obtaining greater geodetic control for improved missile accuracy, the vulnerability of any stationary target on earth will be increased by many orders of magnitude. Defensive and retaliatory weapons must have the greatest mobility that can be developed if they are to retain their effectiveness. The Interstate System, with its uniform characteristics, will provide arterial routes for the development of this mobility.

Because of the military pressures generated by the rapid evolution in weapons systems, the National System of Interstate and Defense Highways, a relatively small system of controlled-access arterial highways, interstate in character, is of greater importance to our national defense now than ever before.

I trust the views expressed above will prove helpful.

Sincerely,

F. S. BESSON, Jr.,
Major General, U.S. Army,
Chief of Transportation.

May we make this exhibit 30, Mr. Chairman?

Mr. BLATNIK. Without objection, it is so ordered.

Mr. MAY. When you helped to compose that letter, Mr. Chacey, did you have in mind the 14-foot vertical clearance?

Mr. CHACEY. I did, sir, and I think the evidence we have presented here indicates we were. That was August 7, 1959, at which time we were very actively trying to resolve some specific dimension to recommend to the Federal Highway Administrator.

Mr. MAY. Mr. Siegle, I have here a memo prepared by you directed to Paul F. Royster. It is dated September 25, 1959. I wonder if you would read that to the subcommittee.

Mr. SIEGLE. What was your request with respect to reading it, sir?

Mr. MAY. Would you read the letter for the subcommittee, or the memorandum?

Mr. SIEGLE (reading):

On September 25 Mr. Chacey telephoned me stating that he felt——

Mr. SCHERER. This is a letter from whom to whom?

Mr. MAY. From Mr. Siegle to Mr. Royster within the Bureau of Public Roads.

Mr. SIEGLE. Mr. Royster, the Assistant Commissioner of Operations, and my chief.

EXHIBIT 31

On September 25 Mr. Chacey telephoned me stating that he felt he was set back considerably because of comments being received from State people. In one of the States (perhaps Kansas or Colorado) he understood that the bureau had refused to approve vertical clearances as great as 17 feet and he understood that Mr. Tallamy was telling people that he was waiting to hear from Department of Defense just what Department of Defense wanted.

I told Mr. Chacey that I could well understand disapproval of clearances up to 17 feet on a general statewide basis. I pointed out that where specific missile movements are involved in the vicinity of some of their missile bases, increased vertical clearance has in some instances now been financed with interstate funds to provide clearances greater than normal in order to permit passage of the missile vehicle. On the other hand until an agreement on policy was reached for 17-foot vertical clearances I would anticipate disapprovals on a statewide basis of any State's request to provide 17 feet.

Mr. Chacey asked my opinion as to the desirability of sending a letter to us at this time. I told him that at any time they have their minds made up as to what they wanted and are ready to provide sound justification, they should do so. I reminded him of Mr. Tallamy's attitude in the meeting a few months ago with General Besson where Mr. Tallamy indicated a willingness to work with them on increased vertical clearances even greater than 17 feet, but stressed the necessity for having strong justification which could be supported before congressional committees. I told Mr. Chacey that if he felt he could move ahead at any time without waiting for the results of studies which General Besson had asked him to make (one in cooperation with us), he should do so.

We then reviewed some of the vehicle concepts with which we have been working, and I referred again to the vehicle configuration which was used in the meeting several months ago which was unconvincing, whereupon Mr. Chacey told me that in his opinion it was impractical to move vehicles over secondary roads with as little as 10-inch undercarriage clearance such as we now have under study for interstate movement. I indicated that this seemed irrelevant to me because we were not talking about 17-foot vertical clearances on secondary roads. At this point Mr. Chacey said that they were thinking of not only 17-foot vertical clearances for the Interstate System but also for the primary and secondary routes. I told him this was the first time I had ever heard that they were thinking about such clearances on anything but the Interstate System and reminded him of my suggestion last February that they move missiles over Federal-aid primary routes because of the fewer structures involved. We had discussed specifically the fact that there would be only a few structures to modify, perhaps no more than three or four entirely across a State on the Federal-aid primary system compared with one every few miles on the Interstate System. Mr. Chacey objected to that concept of movement last February because he said that the problem was not only a size problem but a weight problem, and on this basis we would have to strengthen all of our bridges to accommodate the heavier and larger movements. It was this argument that caused us to focus attention entirely on the Interstate System. One of the things that he had particularly mentioned last February was the ridiculous situation the Department of Defense would be in to support the Interstate System as the system of greatest defense importance and then proceed to improve parallel primary routes for movement of missiles and other oversize and overweight vehicles. In the course of our current discussion Mr. Chacey relaxed his position from one of saying that "it should be obvious to anyone that a

17-foot vertical clearance should be adopted on all systems rather than being confined only to the Interstate System" to one of saying that "a 17-foot vertical clearance requirement should apply to both interstate and primary routes and need not extend to secondary routes."

I was dismayed at his despairing attitude and his inclination to place all the blame for inaction on Mr. Tallamy, and told him again in our concluding discussion that if he felt they had strong justification for 17-foot vertical clearance they should present the story without delay. Mr. Chacey said he was confident that he could go before a congressional committee right now and explain their need.

Mr. Chacey's concluding comment was that he was going to see Mr. Armstrong at 1 o'clock this afternoon, September 25, and that he would propose to him that Mr. Armstrong, himself and I get together to discuss this matter further.

5 P.M., SEPTEMBER 25, 1959.

Mr. Chacey dropped in my office late today, read the above and said he was thinking of movement on primary and secondary routes only as detours around interstate structures with inadequate clearance. He felt it should proceed at once to draft a letter to us requesting the 17-foot clearance. He wants to move this problem along prior to the AASHO meeting at which time Alf Johnson has told him that questions will arise involving clarification of Department of Defense position. Mr. Chacey was of opinion that AASHO could take action on acceptance of standards, but I told him I thought Mr. Tallamy would want clearance from congressional committees before approving such a change.

Mr. MAY. Thank you, Mr. Siegle.

Mr. SCHERER. What was the date of that memorandum to your boss?

Mr. SIEGLE. This memorandum was dated September 25, 1959.

Mr. SCHERER. And up to September 25, 1959, I understand it is your testimony, Mr. Siegle, that the Department of Defense has not indicated by any official communication what its recommendation would be to the Bureau of Public Roads with reference to increasing the clearance?

Mr. SIEGLE. No official communication had been signed to us on this. They had furnished us the draft back in January to consider.

Mr. SCHERER. And you were then saying to your boss in that memorandum, "We are willing to consider it and present it to the American Association of State Highway Officials, or whomsoever we should present it to, as soon as the Department of Defense finally makes up its mind." Is that right?

Mr. SIEGLE. I do not believe I went quite so far, sir.

Mr. SCHERER. That is what I interpreted your testimony to be.

Mr. SIEGLE. I told him I thought that if they had their position established and had strong justification for it, that we should not delay on it, but we should proceed.

Mr. SCHERER. On this date, September 25, 1959, if I interpret your memorandum correctly, it is your position at least—I don't know whether it is the Bureau of Public Roads' position, but it is your position at least—that the Department of Defense had yet not definitely made up its mind, and you were willing to consider its request as soon as it notified you officially it wanted 17 feet or 18 feet or 16 feet. Is that right?

Mr. SIEGLE. With the qualification that Mr. Tallamy had previously told them that whatever they would advocate he would like to be assured that there was strong justification of that position for that level.

Mr. SCHERER. That is what you were saying in your memorandum.

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. That in your discussions with the Defense Department you had asked it, along with its request for either a 17-foot clearance, or 18 foot, or whatever they should finally decide on, that it present enough documentation to substantiate the request. Isn't that right?

Mr. SIEGLE. We wanted strong justification for the position. We had not specified the exact means of transmittal.

Mr. SCHERER. Before Mr. Siegle leaves the stand, I have some questions to ask him on another subject, which I do not want to inject into this particular phase of the hearings.

Mr. MAY. May we make this exhibit 31?

Mr. BLATNIK. It will be exhibit 31. Without objection, it is so ordered.

Mr. MAY. Mr. Chacey, shortly thereafter was a letter prepared for General Besson's signature to Mr. Tallamy, in which it was requested that the standard be raised from 14 to 17 feet?

Mr. CHACEY. There was.

Mr. SCHERER. Is this letter to which you now refer the first official request from the Department of Defense to the Bureau of Public Roads that the clearance be increased from 14 to 17 feet?

Mr. CHACEY. This is the first official position that the Department of Defense has taken in this matter since October 1957.

Mr. WRIGHT. May I ask a question?

Mr. SCHERER. In October 1957, the official position was 14 feet?

Mr. CHACEY. That is correct.

Mr. SCHERER. Now we come to October 1, 1959, 2 years later, and while there have been some discussions between the two agencies, this, I understand then, is the first official request that the Bureau of Public Roads act on the position taken by the Department of Defense with reference to increasing the clearance from 14 to 17 feet. Is that right?

Mr. CHACEY. That is correct. I should like to comment briefly, Mr. Chairman, on the reference in this memorandum. My concern principally, and the reason why I went to the Bureau of Public Roads, was that General Besson asked us to develop jointly some information on movements around these structures, and this was an activity which the Bureau of Public Roads was carrying out for us. We were not getting the answers and we were not getting the decision, and I was concerned about it.

Mr. WRIGHT. Mr. Chairman.

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. I believe, Mr. Chacey, that you testified the other day to the effect that on or about the 7th of January 1959, you had met with some people in the Office of the Secretary of Defense, and at that time had reviewed a draft of a proposed letter to be signed by General Besson to the Chief of Highway Transportation, and it was agreed to discuss this informally with the Bureau of Public Roads people. Was that essentially the same proposal which now emerges as a signed document on October 1, 1959?

Mr. CHACEY. Essentially it was the same letter. As far as the vertical clearance specifically recommended, it was the same. It had some—there was a paragraph or two added to it in view of the——

Mr. WRIGHT. So from the 7th of January until the 1st of October you have been trying to get such a document as this signed, so as to

make these informal things formal, and these unofficial things official. Is that correct?

Mr. CHACEY. Actually the date was January 29, on which we gave to the Bureau of Public Roads a draft of a letter. It was from that time until mid-October that we were trying to find—or we were following a normal relationship in trying to coordinate this with the Federal Bureau of Public Roads, who had it to administer. That is No. 1.

No. 2, we were trying to find more specific justification for a specific dimension.

Mr. WRIGHT. But back in January, at that time you had personally concluded that the proper vertical clearance dimension was 17 feet. Is that correct?

Mr. CHACEY. Well, I think, as I testified the other day, that I had come to a conclusion as a result of our coordination within the Department of Defense that this appeared to be a practical thing to do.

Mr. WRIGHT. And that was January, and now it is October when the official letter comes out recommending 17 feet.

Mr. CHACEY. That is correct, and unfortunately I still could not point to that specific justification that would unquestionably satisfy everyone's questions as to whether it was 17 or some other dimension, and just why it had to be done.

Mr. WRIGHT. But this is the thing you had been working on all of these months in an effort to resolve it and bring it to a head and get a signal of your own?

Mr. CHACEY. Our objective was to resolve it officially between the two Federal agencies.

Mr. WRIGHT. Thank you.

Mr. MAY. Mr. Chacey, before this letter was presented to the Bureau of Public Roads, you obtained the concurrences from certain officials of the military and from the Department of Defense; did you not?

Mr. CHACEY. I did, sir.

Mr. MAY. Can you tell us when you obtained these concurrences, and from whom?

Mr. CHACEY. These concurrences were obtained on September 30 and October 1, 1959. Do you want the date each one was?

Mr. MAY. Please.

Mr. CHACEY. For the Department of the Air Force, Colonel Guilbert on September 30, 1959, and Mr. Earle Williams, September 30, 1959. These were the Department of the Air Force representatives.

Mr. MAY. They concurred in this letter?

Mr. CHACEY. That is correct.

And for the Department of the Navy a Mr. Brown on October 1, 1959.

For the Deputy Chief of Staff for Operations, Department of the Army, a Lt. Col. H. R. Coates signed for a Colonel Lemmon. That was October 1, 1959.

For the Office of Defense Research, Office, Director of Defense Research and Engineering, Mr. A. H. Bird. That was on October 1, 1959.

And for the Office of the Assistant Secretary of Defense, Supply and Logistics, Dr. Germane, October 1, 1959.

Mr. MAY. So we have a representative of the Air Force, the Navy, the Deputy Chief of Staff for Operations of the Army, the Office of

the Secretary of Defense for Research and Engineering, the Office of the Assistant Secretary of Defense for Supply and Logistics—all concurred in this letter requesting that the standard be raised to 17 feet. Is that true?

Mr. CHACEY. That is correct.

Mr. MAY. You know, I think we should have this letter read into the record, and maybe Mr. Constandy can do that, to show that in essence this letter is identical to the draft of the previous January 29, 1959, draft, prepared for General Besson to Mr. Tallamy.

Mr. BLATNIK. Mr. Constandy, will you please read the letter.

Mr. CONSTANDY. The letter reads:

EXHIBIT 32

HEADQUARTERS,
DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF TRANSPORTATION,
Washington, D.C., October 1, 1959.

Hon. B. D. TALLAMY,
Federal Highway Administrator,
Department of Commerce, Washington, D.C.

DEAR MR. TALLAMY: Reference is made to our discussion on May 29, 1959, concerning the vertical clearance of structures over the National System of Interstate and Defense Highways and the informal recommendations which were furnished you on January 23, 1959, following an extensive review of the foreseeable highway clearance needs of the missiles and space vehicles required for the defense of the United States.

In accordance with your request for more specific data to serve as a basis for determining the exact vertical clearance necessary, we requested detailed guidance from those officials in the Department of the Air Force primarily responsible for development of the long-range missiles. Although it has not been possible to develop the specific information you desire, certain of the comments furnished are believed significant. These include the fact that vehicles and missiles are now in production which will require a vertical clearance in excess of 14 feet, and the strong feeling that the vertical clearance should be increased from 14 feet to 17 feet.

From our exchange of views with the responsible officials of defense agencies, it has become increasingly clear that those responsible for missile development simply do not know the specific characteristics and dimensions of future vehicles. This is due primarily to the difficulty of forecasting specific needs and discoveries in such a dynamic area. They do, however, express the feeling that highway engineers should provide the maximum clearance that is economically feasible to insure optimum flexibility in the design and operation of various weapons systems.

Attached as enclosures 1 and 2 are sketches showing the geometric characteristics of vehicles presently under development. Attached as enclosure 3 is a chart showing the number of military movements for which permits were obtained in 1958 as a matter of military necessity because vertical clearances exceeded the present standard of 14 feet. The number of oversize movements generated by the missile program is increasing.

As guidance systems improve, random displacement of defensive units will become increasingly necessary. With observation satellites and the flight time of an enemy ICBM only 30 minutes from launch to target, this accuracy will make displacement imperative. Under such conditions, to insure adequate antimissile defense of the continental United States, it is believed the antimissile system will have to be mobile. Currently prototype components of this system are so large that even limited mobility is questionable. However, every effort is being made to develop more mobile equipments, and, as the state of the art progresses, this will be accomplished. To benefit from this progress and secure the necessary flexibility, highways must provide a proportionate share of the needed mobility.

As you know, the Department of the Defense has strongly supported the construction of the National System of Interstate and Defense Highways with the understanding that the foreseen defense needs, as well as those of the civilian

economy, would be incorporated in its design. I am greatly concerned that if we wait for detailed justification of an exact dimension it will then be too late to do anything, and we shall have spent many billions of dollars for highways to serve the national defense that will not in fact do so for the most important defensive needs.

In the past, it has been possible to move most oversized items by finding alternate routes around obstructions. As the routes of the Interstate System are constructed, and additional freeways, expressways, and other primary routes are developed, it will become more difficult and eventually impossible to move vehicles and loads exceeding 13½ feet in height any appreciable distance.

This problem has been reviewed extensively by appropriate officials in the Department of Defense. It is the considered opinion of these officials that the National System of Interstate and Defense Highways should provide a minimum vertical clearance of 17 feet. However, for urban areas where alternate or circumferential routes having a minimum vertical clearance of 17 feet are available around the built-up areas, the present vertical clearance standard will be adequate for the foreseen needs of national defense.

It is realized that some rural structures have already been built with a 14-foot vertical clearance and that others with the same clearance are under construction. It is not expected that these structures should be modified at this time. Also, in view of the satisfactory operation of the procedures agreed to by the States and the Department of Defense with respect to the movement of oversized and overweight vehicles, it is not intended that the recommended modification of the geometric design standards for the National System of Interstate and Defense Highways imply any need for change in State laws which impose height limitations on vehicles.

I hope you will be able to effect the coordination necessary to permit immediate revision of the geometric design standards for the National System of Interstate and Defense Highways to provide a minimum 17-foot clearance for the rural and circumferential Interstate System routes and for those routes of the system passing through urban areas for which there are no alternate routes built to comparable structural standards.

Your cooperation in matters pertaining to the highway needs of national defense is greatly appreciated.

Sincerely,

F. S. BESSON, JR.,
Major General, U.S. Army,
Chief of Transportation.

Mr. MAY. Mr. Chairman, may we make that letter exhibit 32?

Mr. BLATNIK. Without objection, it is so ordered.

Mr. SCHERER. Now, Mr. Chairman, this letter was dated October 1, 1959. Mr. Chacey, in the second to the last paragraph Major General Besson says:

> I hope you will be able to effect the coordination necessary to permit immediate revision of the geometric design standards for the National System of Interstate and Defense Highways to provide a minimum 17-foot clearance. * * *

Within how many days had Mr. Tallamy provided that change or the revision in the geometric designs to 17 feet?

Mr. CHACEY. I didn't get the last part of your question, sir.

Mr. SCHERER. I said, within how many days after October 1, the date of this request by Major General Besson, did Mr. Tallamy bring about the change requested in the geometric design by revising the vertical clearance upward from 14 to 17 feet?

Mr. CHACEY. I am aware of the date, yes, that was October 23, 1959, on which the American Association of State Highway Officials submitted the proposed change to the Federal Highway Administrator. The date on which he submitted this proposal to the Secretary of Commerce—I am not aware of that date. Yes, here it is—October 27, 1959.

Mr. MAY. Mr. Chacey, Mr. Tallamy was never successful in bringing about this suggested change, was he?

Mr. CHACEY. This specific requested change to 17 feet was not accomplished.

Mr. SCHERER. I understand that, but Mr. Tallamy acted immediately, did he not? He took it to the American Association of State Highway Officials convention which met in 2 weeks following this, and the American Association of State Highway Officials acted upon it, and Mr. Tallamy immediately made a recommendation to the Commerce Department in accordance with the AASHO's resolution.

Mr. CHACEY. There is not any question but what he gave it complete and expeditious support.

Mr. SCHERER. All right.

Mr. MAY. Mr. Chacey, in connection with this letter, you prepared a memorandum for record dated October 5, 1959. I have a copy here and you might follow me on it. Instead of reading it all, to save time I will just read the last paragraph, and we will make it an exhibit. Well, I might read the entire memo.

EXHIBIT 33

Subject: Vertical clearance for structures over the National System of Interstate and Defense Highways.

(1) Hand-carried the letter signed by the Chief of Transportation, October 1, 1959, addressed to Mr. Tallamy, Federal Highway Administrator, the morning of October 2, 1959.

(2) The letter was discussed with Mr. Siegle, BPR public liaison representative.

(3) During the discussions I expressed the feeling that the Department of Defense was hopeful the Bureau of Public Roads could accomplish the change in standards at the AASHO meeting, October 11 to 16, 1959. It was also agreed that Mr. Siegle would recommend official transmittal of a copy of the letter to Mr. Alf Johnson, executive secretary, American Association of State Highway Officials, immediately.

(4) Because of the fact that Mr. Johnson had requested information on the Department of Defense position on vertical clearance needs, I told Mr. Siegle I would informally furnish Mr. Johnson a copy of the letter but that the Department of Defense had no plans for officially requesting the American Association of State Highway Officials to initiate the action in this matter. It was agreed that the initiation of this proposal should come from the Federal Bureau of Public Roads to the AASHO.

D. K. CHACEY,
Assistant Chief of Transportation.

What brought about that thinking, Mr. Chacey?

Mr. CHACEY. Well, that is in accordance with our long-established procedures. The Federal Bureau of Public Roads has the responsibility of administering this program, and it is our judgment, and it has been for many years, more appropriate that we handle our official matters with the American Association of State Highway Officials through the Commissioner of Public Roads.

I don't want any misunderstanding that we are barred from discussing these problems, or writing to—and we do on many problems—to States and the American Association of State Highway Officials, but in an official matter of this kind, and in accordance with, as we interpret it, the provisions of the Federal-aid highway legislation, this is the correct way to do business.

Mr. MAY. So it is true that the Bureau of Public Roads, as Congressman Scherer pointed out, was powerless to act until they received this official request from the Department of Defense?

Mr. CHACEY. I don't like the word "powerless." They have the responsibility. We serve in an advisory capacity. We have no veto authority over anything the Federal Highway Administrator wishes to do. So I would not concur that he was powerless to do something. I would concur that from the standpoint of defense needs he had no clear-cut justification to do anything until that date.

Mr. MAY. Thank you.

May we make that exhibit 33, Mr. Chairman?

Mr. BLATNIK. Without objection, it is so ordered.

Mr. WRIGHT. Mr. Chairman, may I ask a question here?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. In regard to this letter of October 1, signed by General Besson, on the second page, in the second paragraph from the top of that second page—I am not sure that you have it in the same form as I do, but the paragraph beginning with the words "as you know." Down here in the second sentence in that paragraph where the conclusion is reached—is it fair for me to ask you, did you assist in the drafting of this letter, Mr. Chacey?

Mr. CHACEY. There is no question about it. I played an important part in the drafting of this letter.

Mr. WRIGHT. This statement is made there, and I think it is quite significant:

> I am greatly concerned that if we wait for detailed justification of an exact dimension it will then be too late to do anything, and we shall have spent many billions of dollars for highways to serve the national defense that will not in fact do so for the most important defensive needs.

You endorsed that statement?

Mr. CHACEY. That was my feeling. Yes, sir.

Mr. WRIGHT. Just frankly and candidly don't you feel that that had been going on for about 3 years; that we had been waiting, for whatever reason, be it good and valid and understandable, nevertheless that we had been waiting for a more detailed justification, and that we had been spending several billions of dollars for highways to serve the national defense needs which in effect would not do so?

Mr. CHACEY. No, sir. I cannot concur in that statement.

Mr. WRIGHT. You think we were just beginning to do this and just beginning to spend billions of dollars?

Mr. CHACEY. Not billions of dollars. There is much benefit to be derived from the Interstate System in addition to the movement of oversized items, and I think it leaves the wrong complexion on the whole thing to try to tie this in——

Mr. WRIGHT. Oh, yes. Of course.

Mr. CHACEY (continuing). As the one and only thing of importance.

Mr. WRIGHT. I quite thoroughly concur in that.

Mr. CHACEY. But there is no question, frankly. We were trying to find and develop some place in the Department of Defense something more specific than we were able to develop, and it most certainly contributed to the delay in the formulation of a specific Department of

Defense position. I think, as expressed in our associations with the Bureau of Public Roads, they wanted to act in the public interest. They do so every day in the week without any hesitation. But we have clear-cut justification for what we want, and in this instance we simply were not able to satisfy people that we had developed specific justification for an exact dimension. There was not any question in anybody's mind but what we ought to go over 14 feet, but just what should it be was the question.

Mr. WRIGHT. And you frankly acknowledged that in this statement, I think.

But back to the question: If it was true on October 1, 1959, that to wait for detailed justification would result in the spending of billions of dollars for highways for the national defense that would not in fact do so for the most important defensive needs—if that was true on October 1, 1959, was it not true in 1957, when you then were worrying with this problem?

Mr. CHACEY. In the choice of words here to express our ideas, the use of the words "billions of dollars" was related to the cost of the overall Interstate System.

Mr. WRIGHT. Of course, I understand that.

Mr. CHACEY. In other words, we are talking about $40 billion.

Mr. WRIGHT. And not all of that is attributable to the defense needs, obviously.

Mr. CHACEY. That is right.

Mr. WRIGHT. But we are spending billions of dollars on the highway system.

Mr. CHACEY. That is correct.

Mr. WRIGHT. And one of the purposes of the highway system is to serve the defense needs.

Mr. CHACEY. To serve, among other needs, those of the national defense.

Mr. WRIGHT. With that reservation, if it was true on October 1, 1959, that to wait for detailed additional justification would result in the spending of much money for highways to serve the national defense that would not, in fact, do so, was it not also true in 1957?

Mr. CHACEY. Based on the assumption you are going to a 17-foot vertical clearance, that was true from the day we started. That was the thinking. Not that we were wasting billions of dollars, but as we go ahead——

Mr. WRIGHT. To wait would result in waste.

Mr. CHACEY. If you wait until two-thirds of it is built, most of the water is over the dam and you can't retrieve it and then the most economical thing to have done would be to parallel it for movement of oversized items, it not being economical to go back and change every structure that had been completed.

Mr. WRIGHT. But as an abstract proposition, if this statement that to wait for a detailed justification until we had all of the justification we needed would result in the wasting of a good many dollars to provide defense highways that would not effectively serve the defense needs—if that were true on October 1, 1959, could not the same thing be said to have been true in October 1957, 2 years earlier?

Mr. CHACEY. In October 1957 we simply did not have the items of equipment and the military weapons, and the defensive and offensive weapons that we have on October 1, 1959.

Mr. WRIGHT. But you were concerned with the problem in 1957, weren't you?

Mr. CHACEY. That is correct.

Mr. WRIGHT. You and Mr. Siegle had discussed the problem as of October 1957, had you not?

Mr. CHACEY. That is correct.

Mr. WRIGHT. And there was knowledge within the Defense Department that we might have a serious problem on our hands, and probably would have a serious problem on our hands as a result of all these oversized items?

Mr. CHACEY. At the time that the Department of Defense position was established in 1957, we had no knowledge of many of the items of equipment, and as far as I was personally concerned, I did not visualize the concepts which are currently thought of by many of our military authorities.

Mr. WRIGHT. But you maintained in October 1959 that to wait would result in wasting money rather than saving money. You feel that was true, don't you?

Mr. CHACEY. Well, I stated it here the way I feel: That if we spent billions of dollars for the Interstate System and did not provide adequately for the movement of this type of weapon and this type of new concept—and it was new, and in all honesty it is new and it was not in existence in 1956—that we would have not provided for our most important needs, being the new needs of the mobile defense concepts and the dispersal requirements.

Mr. WRIGHT. Did these concepts arise after 1957?

Mr. CHACEY. As far as I am concerned, they did, sir.

Mr. SCHERER. That was after sputnik.

Mr. WRIGHT. That is right. I am wondering what sputnik had to do with it. How long have we had the Atlas missile?

Mr. CHACEY. We have had the Atlas missile for some little time, as I testified earlier.

Mr. WRIGHT. Long before sputnik, didn't we?

Mr. CHACEY. Well, I knew that we were working on a missile of this character. I didn't know what the characteristics were. I knew its one vertical dimension. I knew that there were some plans to move it, or some discussions to move it by air. I knew it had been checked out as far as routes were concerned, and it could be moved by highway. At that time—of course, all of this was classified—and at that time I had no knowledge of some of the concepts which are currently thought of today.

Mr. WRIGHT. Was not the configuration of the Atlas missile known in 1954?

Mr. CHACEY. I can't give you a specific date. I know it has been several years ago we worked on some routings for the Atlas missile.

Mr. WRIGHT. Mr. Chairman, I have consumed entirely too much time. Thank you.

Mr. BLATNIK. Mr. May.

Mr. SCHERER. Off the record.

(Discussion off the record.)

Mr. BLATNIK. Mr. May.

Mr. MAY. Just a couple of items, Mr. Chacey. What additional justification did you develop between the May 29 meeting and the October 1 letter for an increase in the vertical clearance from 14 to 17 feet?

Mr. CHACEY. Specifically we had received replies from General Schriever, Department of the Air Force, and from General Medaris, Army Ordnance Missile Command.

Mr. MAY. General Medaris said he did not need it, and General Schriever said he concurred in 17 feet.

Mr. CHACEY. That is correct. In addition to that, we did as General Besson suggested. We expanded some information with respect to, on a State map, identifying the California freeway system in relation to the Interstate System.

Mr. MAY. Did that indicate anything you did not already know?

Mr. CHACEY. It didn't indicate any particular detail that I was not aware of. No, sir. But one of the actual time-consuming things, I think, was the fact that Mr. Siegle and I discussed quite extensively a design vehicle which we would use in the field in studying actual movement of that vehicle over alternate routes around the structures that had been built, and that type of thing. And that did consume some time.

Now, as far as what we knew at the time that the October 1 letter was concerned, it did not add any information at that time. In other words, we had consumed some time agreeing on a design vehicle which involves weight, widths, heights under crucial clearances, and all that kind of thing. That had not gone out to the field. The field made the studies and that information came back to us.

However, I personally felt that this study was based in large part on what was there today, and what we were primarily worrying about was what was going to be there tomorrow.

Mr. MAY. Actually you received an answer from General Schriever, who concurred in 17 feet. There was not much else of significance that developed between May and October. Is that true?

Mr. CHACEY. Let me say it this way. I should like to answer it this way: We were unable to develop additional specific justification as we indicated in our letter, and that was one of the paragraphs that was different in the final letter than the draft that was given to the Bureau of Public Roads initially.

Mr. MAY. What additional information was developed between January 1959 and October 1, 1959, between the original draft letter and the final official letter?

Mr. CHACEY. Of course, in all fairness, this draft letter was given to the Bureau of Public Roads on January 29, 1959, and it was at that time that the Bureau of Public Roads staff began to study this and review it; and what was done in the staff Mr. Siegle has testified on to some extent, and I have no knowledge of that.

As far as we were concerned, I felt that we had in our discussions—and actually from the standpoint of seeking out this problem, these are more significant and more important than the official communications—but in our telephone conversations and our meetings, and such as that, I felt that we had developed a practical Department of Defense position, and actually within the Department of Defense we did

not develop anything of great significance to change or contribute to this. It does not mean we did nothing, but it means simply in the search for this specific dimension we were unable to develop any additional information.

Mr. MAY. Mr. Chairman, for the sake of the witness, since we have interrupted the chronological flow of his story, we drew up a chronology of events, I and the staff, and presented the chronology to Mr. Chacey yesterday and Mr. Siegle, and incorporated their corrections in this. I would like for this to be made an exhibit and printed in the record at this point. This is a chronology.

Mr. BLATNIK. That will be exhibit No. 34.

Mr. MAY. 34.

Mr. BLATNIK. Without objection, it is so ordered.

(The document referred to was marked "Exhibit No. 34" for identification and appears in appendix on p. 422.)

Mr. CHACEY. May I comment on that?

Mr. MAY. Yes.

Mr. CHACEY. When I first finished reading it I believe I made a statement somewhat like this: That it was factual insofar as I could determine, since it was in large part quotes, but words mean different things to different people, and it could be interpreted to develop a different position than other quotes could be used to develop.

Mr. MAY. We would concede, Mr. Chacey, this should be read in connection with the record itself.

Mr. CHACEY. That is correct.

Mr. SIEGLE. Could I also comment on this?

Mr. MAY. Yes.

Mr. SIEGLE. I would agree with this sentiment here. I read it for a very short period of time yesterday afternoon and I would consider what Mr. Chacey has said factually correct with the exception of a few minor details which I mentioned.

Mr. MAY. We made the correction.

Mr. SIEGLE. I understood Mr. Erickson also looked at it, and I suggest maybe our General Counsel should look it over, too, to check some of the details.

Mr. MAY. If they do, and if you have some corrections or changes, we shall make them.

Mr. SIEGLE. All right.

Mr. CHACEY. I should like to add one comment to that for the record. I did not read the detailed paragraphs which were referring to the views or comments of people other than myself.

Mr. MAY. I understand that. You did not read——

Mr. CHACEY. If it was something Mr. Siegle said——

Mr. MAY. You were concerned with the portion relating to the Defense Department.

Mr. CHACEY. That is correct.

Mr. MAY. And Mr. Siegle with those portions relating to the Bureau of Public Roads.

Mr. SIEGLE. That is correct.

Mr. MAY. Mr. Erickson, after the October 1 letter from General Besson to Mr. Tallamy reached the Bureau of Public Roads, were you asked to make another estimate?

Mr. ERICKSON. I believe I was. Yes.

Mr. MAY. I have a copy of your memorandum dated October 6, 1959, to Mr. Siegle. I shall read it and if you have a copy you might follow me.

Mr. ERICKSON. I have a copy and will follow you.

Mr. MAY (reading):

EXHIBIT 35

Subject: Estimated Cost of Increased Underclearances on the Interstate System

In accordance with your request, we have revised the estimate of the additional cost for increasing the vertical underclearances from 14 feet to 17 feet for structures on the Interstate System (our memorandum of March 31, 1959).

The estimate has been revised to reflect some increase in construction costs and also the fact that since our March 31 estimate, 2,300 more bridges have been completed on the Interstate System.

Because the Department of the Army suggests that in urban areas, underclearances need not be increased on structures on routes for which an alternate route may be designated, we have only included a percentage of urban structures.

With reference to toll bridges and tunnels listed on 108D study table 109 (toll bridges and toll tunnels), we do not have sufficient information available to include these facilities. As far as the larger bridges are concerned, the work required to provide a 17-foot vertical clearance would be small, mostly changes in the sway bracings and portals. With reference to most tunnels, a provision for a 17-foot vertical clearance would be tantamount to the construction of a new facility.

Estimated additional cost of providing a 17-foot vertical underclearance for structures on the Interstate Highway System:

(1) Construction of new bridges	$313,000,000
(2) Raising and rebuilding 4,250 bridges already constructed	330,000,000
(3) Raising and rebuilding 6,150 bridges on existing facilities incorporated in the system	480,000,000
Total	1,123,000,000

Is that it?

Mr. ERICKSON. That is a correct reading of my letter.

Mr. MAY. I would like to point out, Mr. Erickson, that on your March 31 estimate, the estimated cost of construction of new bridges was $332 million. That is as of March 31. Here, on October 6, the cost of the construction of new bridges decreased to $313 million. That comes about why?

Mr. ERICKSON. That is due to the difference in the number of bridges to be built since there have been several bridges built on the system during this period.

Mr. MAY. Since March 31, certain bridges were constructed, so it decreased the number to be constructed and decreased the total cost of building the new structures?

Mr. ERICKSON. That is right; and, furthermore, there was this item of bridges in the urban areas which have been involved.

Mr. MAY. I believe you have taken that——

Mr. ERICKSON. That had been taken out in March, also.

Mr. MAY. So this simply relates to the fact that since March 31, certain bridges were constructed and, so, less bridges remained to be built.

Mr. ERICKSON. Yes.

Mr. MAY. In the second instance, raising and rebuilding bridges already constructed, the March 31 estimate was $205 million, and in the October 6 estimate it was increased to $330 million, or an increase of $125 million.

Mr. ERICKSON. That is correct.

Mr. MAY. Is that accounted for by the fact that since additional bridges were built from March 31 to October 6, it would then cost more money to go back and revise those structures?

Mr. ERICKSON. That is right.

Mr. MAY. So the difference between the first two items, the construction of new bridges, and the rebuilding of the old bridges, amounts to a difference of $106 million.

Mr. ERICKSON. That is right.

Mr. MAY. Is that attributable to the fact that during the 6-month period extra bridges were built?

Mr. ERICKSON. I believe that is correct. Yes.

Mr. MAY. Your third figure, raising and rebuilding of bridges on existing facilities incorporated in the system went from $338 million to $480 million. When you consider the fact that you are talking there generally about older structures, there must be some other reason for the increase.

Mr. ERICKSON. Well, this item has included more work than the previous estimates included. You must understand, as we kept making these estimates we did accumulate more data and, as the result the later estimates in my opinion reflect better values than the earlier estimates. The earlier estimates were made primarily merely to give some indication as to what the problem was, and as we kept working on this thing we did come up with better figures.

Mr. BALDWIN. Could I ask a question at that point?

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. If I understand that correctly, Mr. Erickson, on this point of rebuilding structures that had been brought on the system, the change in the figure from somewhat around $300 million to $400 million or more does not indicate any increase because of a delay?

Mr. ERICKSON. No.

Mr. BALDWIN. But is simply a revision of your estimates as to the amount of work to be done?

Mr. ERICKSON. That is right. And what we are trying to point out here is that if you change this clearance to 17 feet and, further, if it is required to revamp all of these existing structures on the system, toll roads and everything else, this represents, or gives you, some idea as to how much money is involved.

Mr. BALDWIN. Yes. Thank you.

Mr. MAY. May we make this exhibit 35, Mr. Chairman?

Mr. BLATNIK. Without objection it is so ordered.

Mr. MAY. That memo is a clear indication of what a delay might cost in money?

Mr. ERICKSON. It gives you a good indication of the financial difference that you will have as a result of delay.

Mr. MAY. In a 6-month period, an additional cost of $106 million.

Mr. SCHERER. I did not hear what you said, Counsel.

Mr. MAY. In a 6-month period——

Mr. ERICKSON. Hold that just a minute and let's check that arithmetic. Your figure is all right.

Mr. MAY. The 6-month delay resulted in additional costs of $106 million in going to 17 feet.

Mr. SCHERER. While we are talking about additional costs, I would like to go back and ask some of the questions that I started to ask before the chairman asked me to desist because counsel wanted to develop another part of this picture at that time.

I would like to approach this from a somewhat different angle to see if we cannot arrive at what the actual loss has been if there has been any negligence or delay. I am asking these questions of either Mr. Siegle or Mr. Erickson, and he who is best able to answer can do so. Now we will go back. As I understand it, there were 2,259 structures authorized to be built between July 1, 1956 and January 22, 1960. Is that right?

Mr. ERICKSON. That is a correct figure.

Mr. SCHERER. And the total estimated cost of building those structures is $374 million. Am I right?

Mr. ERICKSON. That is correct, according to our estimates.

Mr. SCHERER. Now, if we completed these 2,259 structures as authorized, and at the height authorized, and then we started to rebuild those after the construction was completed at the newly authorized height, I understand that the cost would be an additional $206 million. Is that right?

Mr. ERICKSON. That is correct.

Mr. SCHERER. But if the rebuilding of these structures started now——

Mr. ERICKSON. You mean if the rebuilding——

Mr. SCHERER. Started now—because part of them are not completed.

Mr. ERICKSON. That is right.

Mr. SCHERER. Some of them have not been started and some are only partially completed, and some have been built to one height, and some others to another height.

Mr. ERICKSON. That is right.

Mr. SCHERER. And if we started to rebuild them now, the additional cost, as I understand it, would be $176 million. Is that right?

Mr. ERICKSON. That is our latest thinking.

Mr. SCHERER. To get a clearer picture of this thing, suppose the reconstruction of these bridges had started as soon after sputnik as possible—what would have been the additional cost then if we had acted, let us say, the day or the week after sputnik?

Mr. ERICKSON. That is one the basis it started, let's say, in October of 1957?

Mr. SCHERER. That is right. What would have been that additional cost?

Mr. ERICKSON. The reconstruction cost then would have been $40 million.

Mr. SCHERER. $40 million?

Mr. ERICKSON. For the bridges that had been built up to that time.

Mr. SCHERER. And then what would have been the additional cost for structures authorized after October 31, 1957?

Mr. ERICKSON. That would have been $13 million more.

Mr. SCHERER. So then the total cost of converting——

Mr. ERICKSON. Let's make that clear. The additional cost of taking care of those structures authorized since October 1957, had it not been necessary to rebuild them, but had we made the modification at that time—that modification would have cost only $13 million.

Mr. SCHERER. I understand that. Then that would have made the total cost of converting at the time of sputnik, or immediately after, $53 million. Am I right?

Mr. ERICKSON. That is correct.

Mr. SCHERER. And we just showed that if we started to convert as of this moment the additional cost is $176 million. Is that right?

Mr. ERICKSON. $176 million.

Mr. SCHERER. And the cost of conversion at the time of sputnik, which was when you were actually put on notice, was $53 million, so the additional cost of converting now as compared to converting at the time of sputnik or immediately thereafter is only $123 million?

Mr. ERICKSON. That is correct.

Mr. SCHERER. Or the cost of a missile. That is all.

Mr. MAY. How does that estimate coincide with this estimate of October 6 when in the 6 months' period the additional cost was $106 million?

Mr. ERICKSON. I think they are pretty close, considering the fact that we are working with general figures. One thing I would like to call attention to here now is this——

Mr. BLATNIK. I am sorry, but will you please try to keep your voice up?

Mr. ERICKSON. We have been talking a whole lot about numbers of bridges. In our estimating work, numbers of bridges to me is of very secondary importance. First of all, there are no two bridges that cost exactly the same. When you deal in numbers of bridges you must deal in average values, or typical values.

The other thing is that some bridges are wide and some are narrow. Some carry two lanes of traffic and some carry 12 lanes of traffic. In our work, therefore, we have tried as best we could to deal in dollar values, the cost of the bridges on the Interstate System being the first value from which to work. Then from that we derived the cost of the bridges that would be affected by this clearance problem.

And when we deal in money values our figures work out pretty well. When you talk about numbers of bridges you can get all kinds of numbers. If you take an interchange layout, that can contain from 1 to 15 or 16 bridges, and in counting interchanges and in counting road crossings it is pretty easy to get things fouled up.

Mr. MAY. We have learned that if the move to increase the clearance had been made about the time of sputnik, in October 1957, the Government would have saved $123 million.

Mr. ERICKSON. That is correct.

Mr. MAY. If the bridges now have to be revised.

Mr. ERICKSON. Yes.

Mr. MAY. What would the Government have saved if the standard had been properly increased in July of 1956?

That seems to me to be some problem. Mr. Chacey, would there be an urgent need to increase the 14-foot vertical clearance standard if we had no missile program and if no one had ever heard of the Atlas missile or sputnik, for a proper operation of the military? Wouldn't clearances have to be revised?

Mr. CHACEY. I am of the personal opinion that it would be desirable to have a higher vertical clearance than 14 feet as we see and realize the potentialities of freeway construction over the next 25 years.

Mr. MAY. Exactly.

Mr. BALDWIN. Could I ask a question on this point, Mr. Chairman? As I understand it, Mr. Chacey, the question has to do with if there were no missiles entering the picture should the clearances be higher than 14 feet. If you take out the missiles, it leaves all of the facts that were available to the Department of Defense and the Bureau of Public Roads and to this committee in 1956, does it not?

Mr. CHACEY. That is correct.

Mr. BALDWIN. It leaves the other conventional weapons which were in existence at that time.

Mr. CHACEY. Of course this is quite hypothetical.

Mr. BALDWIN. It sure is. Then on that basis the facts show that the Department of Defense made a considered decision and submitted their comments to the Bureau of Public Roads that 14 feet were adequate and they made that decision and submitted that comment before 1956 and after 1956. Isn't that true?

Mr. CHACEY. That is correct. Based on Theater of Operations equipment, and their experience in World War II and since. I should like to comment on that, that I think everyone appreciates the fact that you do not just jump in and change these things every day in the week.

We have had a 14-foot vertical clearance that we have lived with for I don't know how many years. It goes back to when I was in college. I know that; and that is more years than I like to admit. But for a long time we have had a 14-foot vertical clearance and lived with it, and have had some difficulties; but with the Theater of Operations concept that we were working under in 1955 and 1956, it was the considered judgment at that time that rather than introduce into this highway program additional requirements, that we could live with this thing.

Mr. BLATNIK. For how long?

Mr. CHACEY. If there was no freeway construction, as long as—from here on out.

Mr. BLATNIK. That is a puzzle. I thought the Interstate System was to expedite the flow of defense material and equipment. The act of 1956 specifically states it shall be adequate to carry all forms of commerce in 1975. You apparently are looking backward. Had 14 feet been adequate for some problems, it was adequate at that moment without interjection into the future.

Mr. ERICKSON. Let me interject into it another thought here with regard to the 14-foot clearance. As Mr. Chacey has just said, the 14-foot clearance has been the standard highway clearance for many years.

Mr. BLATNIK. Can you give us an estimate? For 20 years?

Mr. ERICKSON. It was adopted officially in 1925 as I recall it, by the American Association of State Highway Officials, and we have had that clearance ever since as a standard clearance. Commercial vehicles have been engineered to operate within those clearances for all of these years, the same as the railways have operated on a standard clearance of 22 feet. That was set as a requirement by the Interstate Commerce Commission 35 years ago or more, and they have operated with that as a standard dimension. It is based on a safety proposition—if a man is standing on top of a boxcar.

The railroad and highway transportation people had engineered their carriers to operate within these. So we do have these exceptional loads, and where we have had those in the past they have been required to operate under permit, and to operate on selective routes where they could pass.

Mr. MAY. Mr. Chacey, you indicated that the Defense Department, although it would want an Interstate System of Defense Highways, had the intention in July of 1956, of not using the defense highways for such items as your 90-millimeter gun and 150-millimeter gun, the 8-inch howitzer, the 155-millimeter self-propelled gun, your landing vehicles, and tank recovery vehicles. Is that true?

Mr. CHACEY. Let me comment on that. I think this question was asked Mr. Whilldin, or approximately this question anyhow. I know, and I know I can't discuss it because it is classified, but I know in the official position and policy of the Department of the Army at the time this was being discussed there were directives which provided guidance for the research and development people and requested that they decrease their size and weight on some of these items.

These things are things that were in this, and under consideration by these people. It is nothing that—I don't think it is correct to say that these are not important. I think that the overriding thing in back of this was their objective to get smaller and more effective equipment for operation in theaters and in oversea areas, not for movement in the United States. And that they could live with movement by rail, or inconveniences of alternate moves in the Zone of Interior.

Mr. MAY. So you did not intend to move those pieces of equipment I mentioned on the Interstate System?

Mr. CHACEY. Those were items of equipment we had planned to move by rail.

Mr. MAY. We have heard Mr. Whilldin explaining the difficulties in moving these items by rail.

Mr. CHACEY. That there is no question about. It is a matter of record we have difficulties.

Mr. MAY. Mr. Erickson, on these bridges, you testified the other day certain bridges on the Interstate System were bolstered up to carry the heavy weights of some military vehicles. Is that true?

Mr. ERICKSON. That is correct.

Mr. MAY. Why?

Mr. CHACEY. Let us say the design standards were modified, better to accommodate the concentrated load. I do not want the impression left we can't move these items over some of the bridges in some other system. That would be incorrect.

Mr. MAY. Aren't you faced with a situation now where you take a tank recovery vehicle and its transporter over the railroad only with great difficulty? The bridges of the Interstate System have been bolstered up but the tank recovery vehicle and its transporter are too high to go under a 14-foot structure?

Mr. CHACEY. Of course, these are specific items that we are discussing. It does not necessarily mean it is all of the heavy items. It does not mean that these are the only items that would be moved that are heavy, on the Interstate System.

Mr. MAY. That is true.

Mr. CHACEY. You see, there are other items. These were the exceptions. There is not any question about it. There were these items

that could not move under a 14-foot overpass structure if it was constructed exactly to the 14-foot dimension. There is no question about that.

Mr. MAY. So it was not planned to move these items on the Interstate System?

Mr. CHACEY. These items can be moved——

Mr. MAY. On the Interstate System.

Mr. CHACEY. These items can be moved on the Interstate System until you come to an overpass structure that limits it. Some of these in some States, the evidence is they are building to 16 feet. There are places on the Interstate System where you can move these items. We were concerned, of course, that as you continue to build this you are forced off of the Interstate System completely and on to the principal primary and secondary, but you can go around the existing routes in many cases. These things have been moved today and they have been moved in the past. What we are worrying about is the future.

Mr. MAY. You know they will not be able to be moved in that fashion in the future, do you not?

Mr. CHACEY. Not continuously over the Interstate System with a 14-foot vertical clearance. The specific items you are talking about exceed 14-foot vertical clearance dimension.

Mr. MAY. Yes.

Mr. CHACEY. And they cannot be moved swiftly or effectively over the Interstate System when it is completed if it were all 14-foot overpass structures, and we have to avoid that.

Mr. SCHERER. May I make a suggestion to you? I don't know how long these hearings will continue, but after we have concluded these hearings it will take some time for this subcommittee to make whatever recommendation it is going to make, and the matter will be presented to the full committee before they make a final recommendation. As I understand it today, they are building these additional structures now at 16 feet. We have here a recommendation as of October 1 from the Department of Defense saying that it should be 17 feet, and it was later changed, Mr. Chairman, to 16 feet. So why can't we say at this time that it is the feeling of this committee, although we cannot direct them to do so, that the Bureau of Public Roads and the Defense Department should get together again and immediately give consideration as to whether an increase to 17 feet should be made. We will save weeks of time and will save millions of dollars, maybe, while we are sitting here on this thing. I think that is the only issue that divides them—whether it should be 16 or 17 feet now.

I have been in favor, as you know, of building these highways adequate enough to meet 1975 traffic needs. The only thing that bothers me, as I said before, is if we increase the vertical clearance to 17 feet, whether or not a year later the Defense Department and commercial truckers are not going to build items, outsized items, that they will not be able to transport under the 17-foot clearances. I think that is inevitable. But we had better pick some standard and we had better stop. If we need 17 feet for our defense, let's start reevaluating it now, so that if the 16-foot clearance is going to be changed, it is going to be changed promptly to 17 feet, and not 2 or 3 months from now, while some more bridges are being built at 16 feet.

I just feel we should at least suggest to these two agencies and to the administration that they reconsider this thing at the time in the

light of the testimony we have heard. I do not know the answer, but I am just saying if we should raise it to 17 feet we are going to face in a year or 2 years from now the fact that somebody will want to transport a battleship on the highways.

Mr. BLATNIK. It is not a question of a battleship, but to me it is incredible that after the act of 1956 was passed, they accepted as their maximum clearance 14 feet, which had been used for the previous 20 years, and where they had managed with it for the past 20 years. They felt it was largely adequate as of that time, and that was the determination made for a so-called supermodern future network of roads. It is obvious to me, although I am not trying to come to any conclusion, that someone did not understand the nature of the future roads because only later on it became apparent, as more and more overpasses were being constructed, and finally the realization dawned upon them that they were boxing themselves off the Interstate System.

Mr. SCHERER. It is obvious that 16 feet now is needed. There is no question but what we may need 17 feet. We have lost $123 million. Let's stop any additional loss. That is my position.

Mr. BLATNIK. May I ask counsel how much more do we have to complete the interrogation of these witnesses?

Mr. MAY. I don't think we can finish today, Mr. Chairman. Just a short time in the morning and we can complete it.

Mr. BALDWIN. Mr. Chairman, may I say on this point that there is only one issue, and that is whether the clearances now established as standards are adequate, and, if not, what the proper clearance is. I for one feel we should get to that issue and resolve it if we are going to stop building bridges today or tomorrow that do not meet the measurements. I do not think we should be worrying about hypothetical questions as to whether, if we did not know about missiles, whether the system was adequate or not. That is entirely aside from the point.

The only question now is whether present construction is adequate, and if not, what is?

Mr. BLATNIK. And what assurance do we have, being laymen, that the determination being made now, the new determination, is based on any more firm ground or justification than the determination made in 1956? We are going around and around the mulberry bush. That was used in the past 3 years and will it be any different than what we now use? It is incredible to me that the whole basis for making the decision was not factual. If these experts could not do it over a period of a few years, we are not going to do it here in a period of a few days, or weeks, or months.

Mr. ERICKSON. Mr. Chairman, one thing I think you should remember in all of this is that the 14-foot dimension that is set up in the standards is the minimum. There are places and there are projects and jobs where to increase those clearances would be a financial hardship; and that is particularly true in our cities, where to raise clearances means additional rights-of-way and oftentimes large additional construction costs.

So the standard that is set up is a minimum standard, and it is really not the figure that the majority of our roads are built to. Since these hearings started we have made a statistical study of the clearances that are being employed on these highways, and the weighted

average that we are building today is 14.8 feet. That is the clearance you will have on the majority of your roads; 14 feet 8 inches or better. But we still have that 14-foot minimum with us which permits us to take advantage of savings in construction costs in tight areas where the additional clearance would be very expensive.

I just wanted to leave that thought with you.

Mr. MAY. Mr. Chairman, we are getting into another matter which might run a little while, so perhaps we could adjourn for today.

Mr. BLATNIK. The time is approximately 5 o'clock. If it is agreeable to the members of the committee the hearings for today will be adjourned until 10 o'clock tomorrow morning.

(Whereupon, at 4:55 p.m., the hearing was recessed until 10 a.m. the following day, Wednesday, February 17, 1960.)

DEFENSE HIGHWAY NEEDS

WEDNESDAY, FEBRUARY 17, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to adjournment, at 10:10 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommittee) presiding.

Present: Representatives Blatnik, Fallon, Jones, Smith, Wright, Johnson, Scherer, Baldwin, Cook, Cramer, Kluczynski, Mumma, Robison, and Schwengel.

Also present: Walter R. May, chief counsel; John P. Constandy, associate counsel; George H. Martin, administrative assistant; and Kathryn M. Keeney, clerk of subcommittee.

Mr. BLATNIK. The Special Subcommittee on the Federal-Aid Highway Program will resume its public hearings.

We are completing testimony held over from yesterday by Mr. Chacey, of the Department of Defense.

Mr. Chacey, would you resume your seat?

Mr. Chacey is accompanied by Mr. Erickson and Mr. Siegle, of the Bureau of Public Roads.

Mr. May?

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY; ACCOMPANIED BY ARTHUR G. SIEGLE, CHIEF, DIVISION OF DEFENSE PLANS AND OPERATIONS, BUREAU OF PUBLIC ROADS; AND ERIC L. ERICKSON, CHIEF, BRIDGE DIVISION, OFFICE OF ENGINEERING, BUREAU OF PUBLIC ROADS—Resumed

Mr. MAY. Mr. Siegle, we discussed, yesterday, the presentation of the Department of Defense proposals to raise the standard to 17 feet, which was submitted to the American Association of State Highway Officials representatives in Boston.

After the convention, in the early part of November, you prepared a memorandum, jointly with Mr. Erickson, for the attention of Mr. Royster and Mr. Williams, of the Bureau of Public Roads, on November 9, 1959. Do you have a copy of that memorandum?

Mr. SIEGLE. I think I have.

Mr. MAY. Would you explain the purpose of the memo and then read it for the benefit of the subcommittee?

Mr. SIEGLE. At that time we anticipated the early approval of the recommendation for increasing the vertical clearance to 17 feet, and we wanted to make sure that before—we wanted to make sure that when we issued instructions to the field that we would—we could take advantage of any possible economies in putting this into effect. So on October—actually on October 30, Mr. Erickson and Mr. Chacey and I, and Mr. LaBoon, who is with me in my office, discussed possible economies in putting this into effect. Mr. Tallamy had requested that we do this, and this memo reports upon that discussion.

Mr. MAY. Would you read the memo, Mr. Siegle?

Mr. SIEGLE. It reads:

In anticipation of the Secretary's early approval of the recommendation for increasing vertical clearances for overhead structures on the National System of Interstate and Defense Highways, Mr. Tallamy requested that prior to drafting instructions to the field there be explored the feasibility of accepting means of accommodating oversize vehicles other than providing the 17-foot clearance at each structure. He mentioned specifically the possible use of the off-and-on ramps of diamond interchanges, and the use of a depressed graveled roadway in the median. He requested that any other means by which modification of existing structures might later be accomplished be considered now for possible adoption as a standard for new construction.

On October 30, Mr. Erickson, Mr. Siegle and Mr. LaBoon discussed this matter with Mr. D. K. Chacey.

In considering the possibilities of constructing depressed roadways within the median or shooflies around grade separation structures, it was learned from Mr. Chacey that Department of Defense requirements for avoidance of shock and vibration precluded acceptance of graveled surfaces for specially constructed roadways of any pattern. Since some future oversize vehicles will also have heavy axle loads, it is necessary that all roadways to be utilized have intermediate or high-type paved surfaces. Geometric and structural requirements alone make doubtful the possibility of any savings on new construction as a result of resorting to depressed roadways or shooflies. The requirement for paved surfaces on specially constructed roadways eliminates them entirely as an economic substitute for providing 17-foot vertical clearance for the main roadways.

In considering the possibility of using ramps at interchanges as a means of bypassing restricted clearances on the main roadways, it was apparent that the cost of modification of ramps to meet geometric requirements for snug undercarriage clearances, long turning radius and off-tracking may frequently exceed the cost of increasing the vertical clearance over the main roadways. This is particularly true in one-third of the States where vertical clearance standards have already been increased to 15½ or 16 feet. Review of 49 States current vertical clearance standards showed that—

and there follows a table, the first column headed "Vertical clearance group, feet" and the second column "Number of States," and the third column "Accumulative percentage."

The entries for vertical clearance groups is 16 and over, number of States 13, accumulative percentage 27; 15½ to 16 is 3, and the percentage is 33 percent; 15 to 15½, 19 States, percentage 71; 14½ to 15, number of States 14, and the estimated percentage 100.

It was recognized that the diamond-type interchange may require very little change in channelization design or vertical alignment of the ramps and that normally it would be cheaper to modify this type of interchange than to increase the vertical clearance over the main roadways. It was further recognized that at some of the very complex interchanges, some special designs and routings of oversize vehicles may be found more economic than provision of 17-foot vertical clearances over all main roadways involved.

However, the operational disadvantages of encountering occasional structures with less than 17-foot vertical clearance was also recognized. Even with advance warning signs, there is considerable hazard, particularly under conditions of military exigencies, in permitting occasional substandard structures on main

roadways. The cost of damage to a single missile caught at a substandard structure could well exceed the cost of providing the 17-foot clearance at the few exceptional structures (such as diamond interchanges) on an entire route across a State where slight savings could be accomplished by routing oversize vehicles over interchange ramps of modified design. In the face of the very real operational hazards involved, no relaxation of the 17-foot vertical clearance requirement was considered justified except possibly at very complex interchanges.

It was concluded that: (1) The Department of Defense requirement for intermediate or higher typed paved surfaces for all roadways built to accommodate oversize vehicles eliminates depressed roadways in medians and shoo-flies around grade separation structures as an economic substitue for providing 17-foot vertical clearance for main roadways; (2) operational hazards, including expensive damage to missiles, preclude use of ramps at normal interchanges (including diamond type) in lieu of providing 17 feet clearance on main roadways; and (3) designs of complex interchanges involving a number of grade-separation structures should each be studied individually to determine whether some savings can be made by special designs and routings in lieu of providing 17-foot vertical clearance for all main roadways involved.

Mr. SCHERER. What are shoo-flies?

Mr. SIEGLE. A shoo-fly is a runaround road around one of these structures of a temporary low type.

Mr. BLATNIK. It is a temporary bypass for an emergency route?

Mr. SIEGLE. Perhaps the word "temporary" as applied here is not quite adequate. We normally think of them as temporary, but in this case if they were provided as a substitute, of course, it would be the permanent substitute arrangement.

Mr. MAY. So this seems to be an answer to any proposal that we do something else instead of raising the clearance to 17 feet, except in the case of very complex interchanges?

Mr. SIEGLE. That is correct.

Mr. MAY. And then it might be more economical to do something else to bypass the complex structures.

Mr. Siegle, why wasn't this study made much earlier, when the problem first arose?

Mr. SIEGLE. This study was made at the time we were preparing instructions to the field as to how to apply this new standard. It was necessary to avoid misunderstanding, and we had had some questions already developed—developing, as to alternate possibilities. This was necessarcy for clearance instructions for application of this new requirement.

Mr. MAY. Out of this study there might have come one or two other solutions for specific structures other than raising the structure to 17 feet. There might have come those solutions, but those solutions did not come about as a result of the study. I notice on page 1 you say 13 States have a vertical clearance of 16 feet and over. Is that an accurate statement?

Mr. SIEGLE. This was based upon the practice of the Bridge Division, or, rather, it was based upon the experience of the Bridge Division in reviewing the vertical clearances to which we were building and approving structures. This question of standards is rather a difficult one because it involves allowances for resurfacing, and it can be tallied up in different ways, depending upon whether we are considering allowances for surfacing or not. In this case these were the actual clearances between the road surface and the clearance of the structure that the Bridge Division had been reviewing and was

familiar with, and this was a summation of the practice on a gross clearance between the pavement and the underclearance.

Mr. MAY. Does this statement indicate that 13 States build generally to 16 feet and over, or always build to 16 feet and over?

Mr. SIEGLE. This was the general practice in those States: That these 13 States were generally building to 16 feet and over, based upon the plans that the Bridge Division had reviewed. And this again—while we use the word "standard" here, the standard may also and more frequently be thought of in terms of clearance plus this allowance for surfacing.

Mr. MAY. Mr. Erickson, this information may have come about because of or due to the material you reviewed. As a practical matter, are there 13 States that build at 16 feet and over?

Mr. ERICKSON. I would have to say "yes," but I would have to explain that answer for you. The 13 States that are listed in this memorandum as building clearances, building their underpasses with clearances of 16 feet or more—that does not necessarily mean that all of the structures they build are in that category. This information was taken from our review records, and we found in those review records——

Mr. MAY. May I interrupt for just a moment, Mr. Erickson? Mr. Chacey, what did you assume was meant by the figures shown on page 1? Could you show Mr. Chacey a copy of that memorandum?

Mr. ERICKSON. Yes.

Mr. MAY. What is your interpretation of those figures, Mr. Chacey?

Mr. CHACEY. It was my general interpretation of the figure, and I think we used the words—

approximately 13 States were building the structures on the Interstate System to a 16-foot vertical clearance.

Mr. MAY. And those 13 States were not building at less than 16 feet?

Mr. CHACEY. That is correct. I think you should make note of the date at which this information was furnished. This was late, as far as any discussions in the Department of Defense were concerned——

Mr. MAY. Yes.

Mr. CHACEY. This was after we had written our letter of October 1.

Mr. MAY. Yes. This may have been reviewed later in the restudy.

Mr. CHACEY. I'm sorry.

Mr. MAY. This information may have been reviewed later in the study after the 17-foot proposal was made.

Mr. CHACEY. It may have been.

Mr. MAY. How did you interpret the information set forth relating to the 15½ to 16 feet?

Mr. CHACEY. Well, the same as we did the 16-foot information. We did not think of it as something that maybe there was a few more or a few less, but we thought generally this was an expression of the trend, or of the activity in the various States in this regard.

Mr. MAY. You interpreted this to mean that 13 States had a standard of 16 feet and built structures at 16 feet and over on the Interstate System. Is that true?

Mr. CHACEY. My interpretation was that about 13 States——

Mr. MAY. It says 13.

Mr. CHACEY. We knew that this came from the plans and specifications. It had been reviewed by the Bureau of Public Roads and we knew there might be an exception to it from the standpoint of standards.

Mr. MAY. You mean an exceptional structure in a given State?

Mr. CHACEY. That is correct. You get into these complicated structures where you have, let's say, a three-level structure. The first one might be 16 feet, but the others, if you add to them it becomes quite an economic consideration, and it does not necessarily mean that every structure on the system will be to that vertical clearance dimension. Generally speaking, yes.

Mr. MAY. We will hear later that on December 7 you notified the Assistant Secretary of Defense that presently one-third of the States are providing vertical clearances on their portions of the National System of Intersttae and Defense Highways of 16 feet or more, and two-thirds are providing 15 feet or more. So you evidently did reply on those figures?

Mr. CHACEY. That was a brief summary statement. I think in other statements we have used the word "approximately" and I know this subject came up in discussions as to the exactness of this figure, and I recommended that we not be specific in the one-third; that it was approximately one-third.

Mr. MAY. I quote:

Presently one-third of the States are providing vertical clearances on their portions of the National System of Interstate and Defense Highways of 16 feet or more and two-thirds are providing 15 feet or more.

Mr. MAY. And this was the information submitted to the Assistant Secretary of Defense to enable him to make a decision.

Mr. CHACEY. That is correct, but I want to simply say this in all fairness to the Secretary and to this question that is before you: I did explain to them that in any official communication we should use the word "approximately" because we were not certain of the exactness of this figure in all States.

Mr. MAY. Why didn't you use "approximately" in the fact sheet?

Mr. CHACEY. For brevity. Generally speaking, this is the picture.

Mr. MAY. What would "approximately" mean? You say one-third of the States. One-third would be 16.

Mr. CHACEY. In my honest judgment it could have been 12 instead of 13. It could have been 14 instead of 13. It could have been 10.

Mr. MAY. What did the Assistant Secretary of Defense believe?

Mr. CHACEY. He believed that approximately one-third of the States were building to this standard.

Mr. MAY. All right.

Mr. Erickson——

Mr. SIEGLE. Could I say something, if I may, on that particular point?

Mr. SCHERER. Just a minute now. I am trying to find out the purpose of the question. One-third is what? Sixteen?

Mr. CHACEY. Actually 13 isn't exactly one-third.

Mr. SIEGLE. In my mind 13 was reported as 27 percent and 3 more States building to 15½ or 16 feet were reported as 33 percent. This gives some perspective of the problem with which we are dealing, and I think it was a very accurate expression of the dimensions of the

problem as confirmed by the fact that our review of all the structures that have been authorized since July 1, 1956, that are over 16 feet, will be just about 30 percent of the total; which gives the same impression that this discussion gave to Mr. Chacey.

Mr. MAY. I am sure of that, Mr. Siegle. We are talking here about 13 States building to 16 feet and over. Mr. Erickson, what are the 13 States?

Mr. ERICKSON. The States that have built——

Mr. MAY. No.

Mr. ERICKSON. What is your question.

Mr. MAY. What are the 13 States building to a standard of 16 feet and over? What States did you use when you prepared this memorandum? What States make up the 13?

Mr. ERICKSON. The 13 States that build to 16 feet—that is the gross clearance we are talking about now?

Mr. MAY. Right.

Mr. ERICKSON. We are talking about a clearance of pavement, the top of the pavement, to the low portion of the structure that forms the obstruction. Those States are Alabama, Arizona, Colorado, Georgia, Maryland, Mississippi, Missouri, Nebraska, New Hampshire, New Mexico, North Carolina, Oklahoma, and Oregon.

Let me explain this just a minute to get this thing clear. These are the States that have built structures up to 16 feet on the Interstate System.

Mr. SCHERER. Since 1956.

Mr. ERICKSON. Since 1956.

Mr. MAY. All structures, or some structures?

Mr. ERICKSON. No, not all structures. That is the point I want to make clear.

Mr. MAY. One structure, or some structures?

Mr. SCHERER. Counsel, let the man answer. He tried to answer this same question before and you interrupted him twice. Let him finish his answer.

Mr. ERICKSON. I will give you some indication here as to how this thing runs. We take the State of Arizona as one of the States that builds a 16-foot clearance, and during the period 1958 and 1959 we approved from that State six bridges at 14 feet, four bridges at 15 feet, and two bridges at 16 feet.

Let us take the State of Maryland, which has had a standard clearance on their important highways of 16 feet for several years. Even with that standard to shoot at they don't always make it. During that period in Maryland we approved one bridge at 14½-foot clearance, one at 15½, and four at 16, and we get 16 feet when we can, and when conditions are such that it is impossible to get it the standard is not a law. It is something that can be used in a flexible manner, and where you can get by with something less, and it is worth several hundred thousand dollars, or in some cases several million dollars, to hold that clearance down, it is helpful.

Mr. FALLON. Are those bridges you speak of on the Interstate System, Mr. Erickson?

Mr. ERICKSON. Yes, sir. That is my understanding. Yes. I can't swear to that, but that is the figures that I have.

Mr. MAY. A very major point, Mr. Erickson, is the fact that Mr. Chacey, when he received these figures, by his testimony, he says that

he interpreted this to mean that 16 States built at 16 feet and over, and he recognized that there will be a possible exception now and then within those States.

I would like to point out——

Mr. ERICKSON. Mr. May.

Mr. MAY. Yes.

Mr. ERICKSON. I think you are belaboring a point here because in all of this discussion we talked to Mr. Chacey numerous times about this clearance proposition, and I don't think there was any question in his mind as to what was meant when we said "these States build to 16 feet and these go to something less." There is a range of flexibility in this whole thing. But here are States that do this whenever it is practicable or reasonable to do it.

Mr. MAY. Mr. Erickson, Mr. Chacey has testified about his interpretation of these figures. This becomes important because later on this certain information was submitted to other people who were forced to make a decision on whether or not to retain the 17-foot vertical clearance that was proposed, or move it back to 16 feet, and it was moved back to 16 feet.

I would like to point out that you used Alabama as one of the 13 States building at 16 feet and over. Alabama has built 12 structures, 10 of which are less than 16 feet.

I would like to point out another State you used was Arizona, and we heard from Arizona. Arizona said that their standard of vertical clearance up to October of 1959 was 14 feet, 9 inches.

Mr. ERICKSON. That is possible.

Mr. MAY. You also mentioned North Carolina as being one of the 13 States to build at 16 feet and over. North Carolina, in answer to us, said that their standard was 14 feet, 6 inches, and they have on the Interstate System 178 structures of less than 16 feet.

Mr. ERICKSON. That may well be true, Mr. May, but when you asked these questions you have gotten from them their minimum standard. The minimum standard set up in the Interstate System requirements is 14 feet. Yet I don't thing there is any State that builds, actually builds, a structure at 14 feet from the top of the pavement to the low steel or low concrete of the overhead structure.

Mr. SCHERER. Mr. Counsel, what was that State you just quoted as having reported to you that it had 178 structures on the Interstate System?

Mr. MAY. North Carolina.

Mr. SCHERER. Those 178 structures, of course, were not built since 1956. Only a handful were built since 1956.

Mr. MAY. These figures do not show how many. I suppose the Bureau of Public Roads can tell us.

Mr. ERICKSON. I have a little information on there that might enlighten you a little more. In 1959, these are the plans that came through the Washington Office, so it does not give the whole pictures, but in North Carolina in 1959 they built 20 structures at 14 feet. These may be off the Interstate System, I am not sure; 14 feet 8 inches, four; 15 feet 2 inches, two; 16 feet, two; and one at 16 feet 3 inches.

These were plans that came through our Office, and this was just a listing of what the State had submitted, and what was approved by our field office.

Mr. SCHERER. When you say "built" you mean approved?

Mr. ERICKSON. That is approved.

Mr. SCHERER. You don't know how many were built.

Mr. ERICKSON. I don't know how many were built.

Mr. MAY. Mr. Chacey, were you surprised to learn this information today?

Mr. CHACEY. Well, as far as I am concerned, I think in all honesty if this proves that instead of 13 States there were 3 or 4, I would be surprised.

Mr. MAY. You may be surprised, Mr. Chacey. We had heard testimony the other day from Mr. Stevens that six States actually have or had a minimum vertical clearance of 16 feet. Six, not thirteen; and of those six, two States had built structures of less than 16 feet.

Mr. CHACEY. I think it is important that I add to that that we had no knowledge, and frankly we were not concerned, with what they were doing for the civilian economy, when we wrote our letter of October 1, 1959.

Mr. MAY. That is not too important. The important point is that this information relayed to you by the Bureau of Public Roads and relayed by you to the Assistant Secretary of Defense had a bearing, or had important weight on the Assistant Secretary in making his decision.

Mr. ERICKSON. Mr. May, I don't like to interpose this way, but you are talking about standards, and standards are minimums.

Mr. MAY. We are not talking about standards.

Mr. ERICKSON. That is what you said just a minute ago. You said four States have standards.

Mr. MAY. Yes.

Mr. ERICKSON. As far as actually what they do is concerned, these standards are actually important as to the least that they would, the same as the standard that is set up in the interstate standard system of 14 feet. Yet we know that States are building up to 16 feet and a little bit more.

Mr. MAY. There is no question that there are occasions in every State perhaps, due to the topography where they build——

Mr. ERICKSON. I am not talking about topography now, Mr. May. I am talking about the height that they build on the ordinary case, the ordinary terrain, where you have to build a fill up to the overpass structure to cross over the road.

Mr. MAY. That is true.

Mr. ERICKSON. I am not talking about where you are in a deep cut or out in the mountains some place, where you may have 150 feet.

Mr. MAY. We have already heard that Alabama has a standard of 16 feet and you testified Alabama built six bridges at 14 feet and four at 15 feet, and two bridges at 16 feet.

Mr. ERICKSON. That is correct.

Mr. MAY. And in North Carolina we had testimony they had built 14 feet, 14 feet 8 inches, 15 feet 2 inches, and two at 16.

Mr. BLATNIK. On that point, Mr. Erickson, you read that in North Carolina the standard of minimum clearance was 16 feet, and then you read a list of numbers of projects approved last year.

Mr. ERICKSON. If I gave you the impression that the standard was 16 feet, that is erroneous. I didn't mean to leave that impression.

Mr. BLATNIK. What you mean in your reference to North Carolina is those States that have a clearance of 16 feet or more.

Mr. ERICKSON. Yes. Those are States where we have built bridges of 16 feet or more. Those 13.

Mr. BLATNIK. Most of the bridges?

Mr. ERICKSON. What is that?

Mr. BLATNIK. Most of the bridges?

Mr. ERICKSON. I can't say definitely it would be most.

Mr. BLATNIK. You said definitely in North Carolina 20 structures are built at 14 feet.

Mr. ERICKSON. Yes; that is true.

Mr. BLATNIK. Let me finish. Four structures at 14 feet 8 inches, two at 15 feet 2 inches, and only two at 16 feet, and one at 16 feet 3 inches, out of a total of 29. That leaves only three structures that are 16 feet or over.

Mr. ERICKSON. That is right.

Mr. BLATNIK. And it is only 10 percent.

Mr. SCHERER. Didn't he also say he does not know whether these are all built on the Interstate System?

Mr. BLATNIK. I am assuming——

Mr. ERICKSON. That is true, too. I don't.

Mr. BLATNIK. Whether they are built or not, they will certainly not be changed until they are approved by the Bureau, and once they are approved they are going to be built to the approved clearance.

Mr. SCHERER. They may not be changed if they are on a primary system other than the Interstate System, because we are not increasing the standard.

Mr. FALLON. Could I clear up one thing in my mind? These are applications for approval?

Mr. ERICKSON. These are plans that have been submitted for approval.

Mr. FALLON. The States asked for this height. You haven't had anything to do——

Mr. ERICKSON. No; we have not asked for anything.

Mr. FALLON. You say you have a minimum of 14 feet.

Mr. ERICKSON. That is right.

Mr. FALLON. And then they can go to a maximum of——

Mr. ERICKSON. Of whatever is feasible for a particular location.

Mr. FALLON. And it is up to them to make the application for that vertical height?

Mr. ERICKSON. That is true.

Mr. MAY. Mr. Erickson, isn't it true that you arrived at the 13-State figure by using the 108–D 1956 estimate in part?

Mr. ERICKSON. That was part of the information and I have the standards that the States submitted at that time in front of me.

Mr. MAY. Before you read them, Mr. Erickson, at that time the States, in making up their 108–D estimates, used as a basis for making the estimate a vertical clearance standard of 16 feet. However, in practice thereafter many of those States did not build all structures at 16 feet on the Interstate System.

Mr. ERICKSON. That is true. Let me explain one other thing here that might give you a little light on this thing: Much of the work that has been done on separation of structures on the Interstate System

so far has been in cities and in urban areas where clearance requirements are more important and more, let me say, more difficult to obtain.

Mr. SCHERER. More costly.

Mr. ERICKSON. They are more costly than they are in the rural areas. And for that reason some of the information that we have on current work may be slanted to take care of that kind of a situation.

Mr. MAY. You made your point. It must be emphasized here, Mr. Erickson, that the fact that this information referred to Mr. Chacey was not accurate——

Mr. ERICKSON. Wait a minute. You said it is not accurate?

Mr. MAY. It is not accurate.

Mr. ERICKSON. I will have to ask you to explain that.

Mr. MAY. Well, as it was set forth, Mr. Chacey testified that his interpretation of this was that 13 States built at 16 feet and over—not occasionally built a structure of 16 feet, but generally built at 16 feet.

Mr. SCHERER. I will have to admit, Mr. Erickson, from reading your letter of November 9 that I, without any further additional information from you—I would have to arrive at the same conclusion as counsel does in this case. If there was some additional explanation made to Mr. Chacey, of course, that might change the interpretation.

Reading this letter I would come to the same conclusion as does counsel.

Mr. MAY. We do not want to spend too much time on this point now, but I would like to read some of the States that you listed to make up the 13 States proposed to be building 16 feet and over. These States, in answer to the questionnaire, gave their minimum vertical clearance standard. I realize there will be occasions when they build higher than that, but this was their standard, and we must assume for the moment that many of their structures would be above this height: Alabama, 16 feet; Arizona, 14 feet 9 inches; Colorado, 16 feet; Georgia, 15 feet 3¾ inches; Maryland, 16 feet; Mississippi, 14 feet; Missouri, 14 feet 9 inches; Nebraska, 15 feet; New Hampshire, 16 feet; New Mexico, 16 feet; North Carolina, 14 feet 6 inches; Oklahoma, 16 feet; Oregon, 15 feet.

Mr. WRIGHT. Mr. Chairman.

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. It is my understanding that prior to the actual erection of an overpass the State must submit to the Bureau of Public Roads its proposed design for your approval.

Mr. ERICKSON. That is correct.

Mr. WRIGHT. From your testimony I gather that it has been the policy of the Bureau of Public Roads to allow a certain amount of latitude so as to accommodate the wishes of the States in those instances where relatively higher structures seem to be warranted.

Mr. ERICKSON. That is generally true. We are interested primarily in our review to see that the minimum requirements have been met. Now, to say that we will take anything over the minimum, that is not correct, because there is a question of economics that comes into this thing.

Mr. WRIGHT. The minimum requirements heretofore had been 14 feet.

Mr. ERICKSON. The minimum requirements under our Interstate standards at the present time, up until January 27, were 14 feet.

Mr. WRIGHT. So that you would not have approved a structure submitted for construction at a vertical clearance level below 14 feet.

Mr. ERICKSON. That is correct.

Mr. WRIGHT. And you may or may not have approved one submitted for construction at a level above 14 feet?

Mr. ERICKSON. That is correct. Depending on the size.

Mr. WRIGHT. I am wondering why it was that in the State of Montana, whose reply to the January questionnaire was read into the record yesterday, they were planning to build 10 structures, having previously built at a standard of 15 feet, and asked the Bureau for permission to build these at a new standard of 17 feet, and were instructed to redesign those bridges back to a 15-foot standard. Why did that happen if you have been allowing this latitude? Why, for instance, was Montana not permitted to go ahead on the 17-foot level it proposed? Why was it told instead to redesign its structures at a 15-foot level?

Mr. ERICKSON. I think I can explain that. The Montana Highway Department, after the October 1959 meeting in Boston, went home with the idea that all structures from now on would be built to 17 feet; the final approval would come through as a matter of course; and they went home and changed their plans for some particular structures that they had on their program for immediate contract. They made this revision and then submitted the plans some time later for Bureau approval.

By this time it had become evident that the 17-foot clearance was not the fixed figure that they had assumed it to be when they left Boston. In the meantime there had been a question of whether the 17 feet would be approved, and whether it would be beaten down to some other figure, or raised up, but the 17-foot was not firm. Consequently, our field people out in Montana and our regional office at Portland did not feel privileged to approve this 17-foot clearance, the 17-foot being considerably above what Montana had been building in the past.

As I recall the situation, in Montana they had been building their structures with 15 feet of clearance prior to the Boston meeting in October of 1959.

Mr. WRIGHT. You say that the Montana people went home from the Boston conference under the impression that the new standard was to be a firm 17-foot minimum. Isn't it true that most of the State highway people went home from that conference under that same impression?

Mr. ERICKSON. A number of them did, I know.

Mr. WRIGHT. Didn't they get that impression from the action of the American Association of State Highway Officials meeting itself, which resulted from the report of Mr. Tallamy to that meeting?

Mr. ERICKSON. I assume so. Yes. And they also might have been reinforced in that from the discussion after that meeting in the Bridge Committee of the Association, where the bridge engineers discussed this problem as to what to do; and, of course, it did appear to all of us who were there at that time that the 17 feet would go through. We in the Bureau, of course, were in no position to tell

a State that it had gone through—that we must comply with the 17 feet. But anyone who was there, I think, hadn't any question in his mind but what it would eventually be approved.

Mr. WRIGHT. In other words, at the time of this meeting in October of last year it was the general impression of the representatives of the Bureau of Public Roads that a 17-foot standard would probably be adopted?

Mr. ERICKSON. There wasn't any doubt about it.

Mr. WRIGHT. Meanwhile something happened to change that situation?

Mr. ERICKSON. That is right.

Mr. WRIGHT. And you were in doubt between that time and last month, when the 16-foot standard was officially adopted?

Mr. ERICKSON. That is right.

Mr. WRIGHT. During this time the people from the various States actually were in something of a quandary to know just what the new elevation standard would be, weren't they?

Mr. ERICKSON. That is true. There was an uncertainty as to just what would come out of this thing after it had been delayed and had been set up for further consideration.

Mr. WRIGHT. As I understand it, these Montana people, to get back to the particular illustration, had gone ahead and designed these structures at the 17-foot elevation?

Mr. ERICKSON. That is right.

Mr. WRIGHT. They submitted these designs and were instructed by the Bureau of Public Roads to redesign them to a 15-foot level?

Mr. ERICKSON. I can't say that it came about in just that form, but the State was advised certainly that under the existing situation the Bureau would not or could not approve the 17 feet.

Mr. WRIGHT. So they subsequently did redesign them, whether on your specific instructions or not?

Mr. ERICKSON. That I don't know. I don't know whether they redesigned them or whether these particular jobs have ever been put up for contract or for bids.

Mr. WRIGHT. I think probably it would be more desirable from their standpoint if they had not redesigned them to 15 feet, because now they would have to redesign them to 16 feet, wouldn't they?

Mr. ERICKSON. Now they have to go back and change them again.

Mr. JONES. May I ask Mr. Chacey a question?

Mr. BLATNIK. Mr. Jones.

Mr. JONES. Mr. Chacey, under section 7 of the Highway Act of 1944 and section 109 of the act of 1956, what is the responsibility of the Department of Defense?

Mr. CHACEY. The Federal-Aid Highway Act of 1944, as I recall section 7, is authorizing the designation of the Interstate System, but it did not identify in there any specific responsibility of the Department of Defense.

Mr. JONES. Over and beyond the designation, it stated that you would work in concert with the Bureau of Public Roads and the State highway departments in designating the routes.

Mr. CHACEY. I think that was understood, but I don't think it is specifically required. I don't think there is any question but what it was understood that the coordination would be accomplished.

Mr. JONES. And what would be the responsibility of the Department of Defense under the 1956 act?

Mr. CHACEY. The responsibility of the Department of Defense, as I understand it, under the 1956 act, is to serve in an advisory capacity to the Secretary of Commerce and the Federal Bureau of Public Roads.

Mr. JONES. Has the Department of Defense actively engaged in that participation?

Mr. CHACEY. We have, sir.

Mr. JONES. What contributes to the fact that there is a discrepancy based upon the fact that the Department of Defense has not with any degree of certainty transmitted to the Bureau of Public Roads information as to the defense requirements in the designing of these bridges and overpasses?

Mr. CHACEY. Well, sir, I think that the record shows that we did transmit to them specific information on this subject. The fact that it was a difficult problem and took us considerable time—that, too, there was no question about.

Mr. JONES. Do you think there is any requirement of the Department of Defense from time to time to examine the physical progress being made on the Defense Highway System?

Mr. CHACEY. Well, of course, the annual reports of the Federal Bureau of Public Roads and the Secretary of Commerce are available to us. We do discuss these subjects at our level——

Mr. JONES. From observation, or just academically?

Mr. CHACEY. Out in the field inspections?

Mr. JONES. Yes.

Mr. CHACEY. Out in the field inspections.

Mr. JONES. How would the Bureau of Public Roads know the defense requirements if they did not observe the structures themselves?

Mr. CHACEY. Well, of course, our interest in this is in two areas. One is functional and the other structural capability.

Mr. JONES. Yes. Let's stay with the latter and examine that first.

Mr. SCHERER. May I interrupt, Mr. Jones?

Mr. JONES. Yes.

Mr. SCHERER. You were not here yesterday, but I think we have covered this time and time again in the last few days of hearings. It is in the record.

Mr. JONES. If it is in the record, fine. We will not go any further, and we will stop right there if it is already in the record. I will not take the time of the committee. Thank you.

Mr. MAY. May we make that November 9, 1959, memo of Mr. Siegle to Mr. Royster exhibit 36?

Mr. BLATNIK. Without objection, it is so ordered.

(The document referred to was marked "Exhibit No. 36" for identification and will be found in subcommittee files.)

Mr. MAY. Mr. Siegle, do you have a copy of the letter from Mr. Tallamy to the Secretary of Commerce dated October 27, 1959?

Mr. SIEGLE. Yes, sir.

Mr. SCHERER. Before we pass to the next subject, Mr. Counsel, let's clarify one more point with reference to these Montana bridges. Mr. Erickson, how many bridges were involved in this Montana controversy?

Mr. ERICKSON. I don't recall at the moment, but there were some five or six structures involved when I got into it. How many more later, I don't know.

Mr. SCHERER. Now, they have had to make these changes in plans, but actually none of these structures have yet been built, have they?

Mr. ERICKSON. That is true. They come at a time when they could not be built by now.

Mr. SCHERER. The loss is restricted to whatever the engineering costs are in change of design.

Mr. ERICKSON. That is correct.

Mr. MAY. You do have a copy of that letter?

Mr. SIEGLE. Yes.

Mr. MAY. Mr. Chairman, I will ask Mr. Constandy to read it. Will you follow it, Mr. Siegle?

Mr. SIEGLE. Yes.

Mr. CONSTANDY. The memorandum is dated October 27, 1959. It is to the Secretary of Commerce from the Federal Highway Administrator:

EXHIBIT 37

Subject: Vertical clearance of bridge structures

Section 108(i) of the Federal-Aid Highway Act of 1956 (section 109(b) of title 23, United States Code) requires that the geometric and construction standards for the Interstate System shall be approved by the Secretary of Commerce in cooperation with the State highway departments. The basic standards were approved by Secretary Weeks on July 17, 1956. The vertical clearance of bridge structures as specified therein was 14 feet plus an allowance for future resurfacing of the roadway pavement. The general clearance being used at present therefore is about 14½ feet. The maximum height of vehicles using the public highways is generally restricted by State law or regulation to 12½ feet.

Before the standards were approved in 1956 there were discussions with the Department of Defense which resulted in their concurrence in the 14-foot vertical clearance figure referred to above. Subsequent thereto, the missile development program has disclosed the necessity for an increase in this figure to 17 feet. We have had numerous discussions with appropriate Department of Defense representatives as to the possibility of altering their missiles, the components thereof, or the carrier vehicles. We are advised that it is not possible to alter the units to permit continued construction of 14-foot clearances, and by letter of October 1, 1959, from the Chief of Transportation, USA, Maj. Gen. F. S. Besson, Jr., I am requested officially to seek the necessary change in standards.

At the meeting of the American Association of State Highway Officials in Boston on October 10, 1959, I advised the executive committee of the request of the Department of Defense for a change in the standards which would provide for a 17-foot clearance on rural sections of the Interstate System and on an appropriate circumferential route in urban areas provided some other satisfactory alternative in the urban area did not exist. The executive committee, after discussion, unanimously approved the request of the Department of Defense and on Sunday, October 11, they presented the matter to the American Association of State Highway Officials Committee on Administration which consists of the chief administrative officials of all highway departments. The matter of changing the specifications was put to a vote and unanimously approved, as was the executive committee action of the day before.

This completes the action required by law insofar as the adoption of standards "in cooperation with the State highway departments" is concerned. However, before it can become effective your approval is needed as Secretary of Commerce.

I recommend that the change be approved by you so that it can be made effective at the earliest possible date. It does not apply to structures already constructed or being constructed, nor does it apply to projects under design, the cost of which would be excessive to alter. The estimated increased cost for the re-

maining structures to be built is estimated to be about $313 million. In view of the vital defense needs brought about by the advance in rocketry, I am convinced that it is important for us to approve the Department of Defense recommendation.

So far as existing structures are concerned, the Department of Defense will have to analyze them one by one to determine the best means of providing for passage of rockets. Probably in the great majority of cases this may be accomplished by constructing or using short bypasses. However, the Department of Defense may in the future have to provide for the alteration of some existing structures.

Attached is a copy of the letter from General Besson to which reference is made herein.

Mr. MAY. Mr. Siegle, I might mention one sentence in the second paragraph here, which says:

Before the standards were approved in 1956 there were discussions with the Department of Defense which resulted in their concurrence in the 14-foot vertical clearance figure referred to above.

We have testimony on that point, and I might also point out that as of 1956 Mr. Tallamy was not associated with the Bureau of Public Roads, and so he happened to have no knowledge of that. Mr. Siegle, do you have a copy of the letter from the Secretary of Commerce to the Secretary of Defense dated November 12, 1959?

Mr. SIEGLE. Yes, I do.

Mr. MAY. May we make this previous October 27 letter exhibit 37, Mr. Chairman?

Mr. BLATNIK. The letter from the Federal Highway Administrator to the Secretary of Commerce. Without objection, it is so ordered.

(The document referred to was marked "Exhibit No. 37" for identification and will be found in subcommittee files.)

Mr. MAY. I will ask Mr. Constandy to read the letter from the Secretary of Commerce to the Secretary of Defense.

Mr. CONSTANDY (reading):

EXHIBIT 38

The Honorable the SECRETARY OF DEFENSE,
Washington, D.C.

DEAR MR. SECRETARY: I have received a memorandum from the Federal Highway Administrator in this Department forwarding a letter to him from Maj. Gen. F. S. Besson, Chief of Transportation, U.S. Army, with respect to revision in the standards for vertical clearances on overpasses on the National System of Interstate and Defense Highways.

The Army Transportation Corps has requested that the standards be raised from 14 feet to 17 feet vertical clearance for overpasses, at an estimated cost of $313 million. This increase in the cost of the highway program is entirely defense related, since it is explained that the extra clearances are required for the transportation of missiles in all parts of the country.

I have the legal authority to approve or disapprove this increase in standards. The increased cost of these standards under present law would come from the Highway Trust Fund, which is already running a deficit even though we have reduced considerably the amounts placed under obligation. Any substantial cost increase which is entirely defense related will certainly raise in the minds of the Congress and the highway user groups the question of charging this cost to national defense budgets or otherwise from general appropriations. Numerous individual Congressmen raised the issue during recent hearings on the increased motor fuels tax. While I have not formulated any definite policy on this subject, it is desirable to give consideration to this situation before approval of this costly increase in standards.

Our evidence of the necessity for this change in standards is the letter from General Besson (copy attached). I will appreciate your advice on this matter from both policy and budgetary points of view.

Sincerely yours,

SECRETARY OF COMMERCE.

Mr. MAY. Mr. Chairman, may we make that letter exhibit 38?

Mr. BLATNIK. Without objection, so ordered.

Mr. MAY. We have just heard on October 27 Mr. Tallamy recommended that the Secretary of Commerce approve the proposed 17-foot standard, and on November 12 the Secretary of Commerce referred the matter to the Secretary of Defense. Mr. Chacey, hereafter did you and General Besson meet with Mr. McGuire, Assistant Secretary of Defense?

Mr. CHACEY. We did, sir.

Mr. MAY. What took place at that time?

Mr. CHACEY. At that meeting we discussed generally the action that the Chief of Transportation had taken on behalf of the Department of Defense, some of the reasons for taking that action and the positions of the various military departments. I don't know how much detail you want me to go into, Mr. May. Does that generally cover the area?

Mr. MAY. What did the Secretary ask you to do?

Mr. CHACEY. During his conference, there was a general discussion of the subject. The Secretary requested that we learn from the Bureau of Public Roads the cost of increasing the vertical clearance to 16 feet, and also requested the representative of the Department of the Air Force to reevaluate on a current basis their needs with respect to clearance standards.

Mr. MAY. You were asked to obtain an estimate of the cost of going to 16 feet?

Mr. CHACEY. Yes, sir.

Mr. MAY. Mr. Erickson, did you prepare such an estimate for Mr. Chacey?

Mr. ERICKSON. Yes.

Mr. MAY. Will you explain that estimate to the subcommittee?

Mr. ERICKSON. I prepared an estimate at the request of Mr. Chacey showing the additional cost of increasing the vertical underclearance on overpass structures on the Interstate System from 14 to 16 feet. The estimate takes into account the fact that 13 States already have constructed bridges with 16-foot underclearance. This adjustment is reflected in the second item of the estimate. The reference to toll bridges and tunnels listed in the 108–D study, we did not have sufficient information available to include the cost of revising these facilities.

As far as the larger bridges are concerned, the work required to provide a 16-foot vertical clearance would be small, mostly changes in sway braces.

In regard to most tunnels, provision for a 16-foot vertical clearance would be tantamount to the construction of a new facility. Most of these tunnels have been constructed to clearances of about 14 feet.

Approximately 48,000 structures will be constructed on the Interstate System. Of these structures less than half will be affected by changes in vertical clearance requirements. Four copies of the graph showing the percentage increase in costs for underclearances, 14 to 16 feet, were attached to the memorandum transmitting the estimate.

Mr. MAY. So that we won't be delayed too long in going over this estimate, Mr. Erickson, I think that the subcommittee would like to know the savings that would result in now revising the structures to

16 feet instead of 17 feet and the difference in costs in building the future structures at 16 feet instead of 17 feet. Do you have those figures?

Mr. ERICKSON. I have the figures that are contained in this estimate here, which are divided into three items: construction of new bridges to the 17-foot height; 16-foot height——

Mr. MAY. Could we stay with that just for a moment. What would the cost be?

Mr. ERICKSON. That would be $195 million.

Mr. MAY. So that if you built the structures——

Mr. ERICKSON. That is additional cost.

Mr. MAY. We are now talking about structures to be built in the future.

Mr. ERICKSON. That is right.

Mr. MAY. So if the bridges in the future were built to 16 feet instead of 17 feet, the savings to the Government would be $195 million? Or is that the total difference including the cost to the State?

Mr. ERICKSON. That is the additional cost, according to this estimate, of raising these bridges to 16 feet instead of 17 feet as we had previously estimated.

Mr. MAY. Future bridges?

Mr. ERICKSON. Future construction, new bridges.

Mr. MAY. So to be clear, if the future structures are built at 16 feet instead of 17 feet, the result in savings will be $195 million?

Mr. SCHERER. That isn't what he is saying. He is saying build them to 16 feet, over and above the present elevation——

Mr. ERICKSON. That is from a 14-foot base.

Mr. SCHERER. It would be $195 million.

Mr. MAY. How much would it then cost to build the structures instead of 14 feet to 17 feet?

Mr. ERICKSON. That was set up in our October 6 estimate as $330 million.

Mr. SCHERER. That is new bridges?

Mr. ERICKSON. That is new bridges to 17 feet.

Mr. MAY. So that if the bridges were built at 17 feet instead of 16 feet, it would cost an additional $118 million; is that correct?

Mr. ERICKSON. That is right.

Mr. MAY. Now suppose the existing structures that now appear on the Interstate System were revised, were revamped to 16 feet, how much would the cost be?

Mr. ERICKSON. That is set up here as raising the bridges that are already constructed. There is $250 million.

Mr. MAY. $250 million to revise them to 16 feet?

Mr. ERICKSON. To 16 feet.

Mr. MAY. How much would it cost to revise them to 17 feet?

Mr. ERICKSON. That was $330 million.

Mr. MAY. So that would be an added cost, if you revise the structure to 17 feet——

Mr. ERICKSON. If you went back and revised all of those structures that had been built in the program——

Mr. MAY. The affected structures.

Mr. ERICKSON. The affected structures that had been built under the program, to give you the 16-foot clearance, that is what it would cost.

Mr. FALLON. Mr. Chairman?

Mr. BLATNIK. Mr. Fallon.

Mr. FALLON. Mr. Erickson, you talk about present structures; are you talking about the structures that have been built since the 1956 act?

Mr. ERICKSON. That is true.

Mr. MAY. Aren't you talking about other structures that now exist on the Interstate System?

Mr. ERICKSON. When we go back to existing facilities, that is the facilities that are included in those roads that have been incorporated into the system, such as your toll roads and your older construction, that is another figure.

Mr. FALLON. The question I asked you, Mr. Erickson, is when were these structures built?

Mr. ERICKSON. Since the 1956 act.

Mr. SCHERER. Wait a minute. I am lost. You said that the raising and rebuilding of the 4,250 bridges which have already been constructed on the Interstate System since the 1956 act to 16 feet would cost $250 million.

Mr. ERICKSON. That is correct.

Mr. SCHERER. Raising them to 17 feet——

Mr. ERICKSON. $330 million.

Mr. SCHERER. Only $70 million more?

Mr. ERICKSON. That is right—$80 million.

Mr. SCHERER. More?

Mr. ERICKSON. That is right. You are only talking about a foot, you know.

Mr. MAY. Is this statement accurate, Mr. Erickson: If we were now to build all future structures at 17 feet instead of 16 feet and if we were to go back and revise the existing structures built since 1956 to 17 feet instead of 16 feet, the total additional cost would be $198 million?

Mr. ERICKSON. I don't know that I understood just what you said. Will you repeat that?

Mr. MAY. $118 million plus $80 million. $118 million is the additional cost to build the future bridges at 17 feet instead of 16 feet. The $80 million would be the cost of revising the older structures to 17 feet instead of 16 feet. $80 million plus $118 million, $198 million.

Mr. SCHERER. According to his testimony, that is right, $198 million more from 16 to 17 feet.

Mr. ERICKSON. That is right.

Mr. MAY. That does not take into consideration the older structures on the older facilities. You don't have any figures on what that might cost?

Mr. ERICKSON. Raising the older structures, to go back and revise them, we have used a figure of $480 million.

Mr. SCHERER. That is the 16 feet, though.

Mr. ERICKSON. That is for anything, and I think I can explain that to you.

Mr. SCHERER. Wait just a minute. That is raising and rebuilding 6,150 bridges to 16 feet. That would cost $480 million?

Mr. ERICKSON. Yes. And in the previous estimate that we gave you, we prepared on October 6, for 17 feet, we used that same figure on the basis that these older structures have all—I wouldn't say all,

but the majority have been built to the 14-foot clearance requirement and whether you go in and raise them 2 feet or 3 feet, the cost isn't going to be materially different.

Mr. SCHERER. These structures to which you are now referring are structures on the Interstate System that may have been built as far back as the 1930's.

Mr. ERICKSON. That is correct.

Mr. MAY. Mr. Erickson, we have talked a lot about the bridges built, say, back in the 1930's, but isn't it true some of the structures on the existing facilities have been built much more recently, perhaps in the last couple of years?

Mr. ERICKSON. That is true, some of them.

Mr. MAY. Yes.

Mr. WRIGHT. Mr. Chairman, just for the sake of clarification, I would like to pursue this thought just a little further.

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Why is it that there is a different figure insofar as it concerns the bridges constructed since 1956, to revamp them to 16 feet from the figure to revamp them to 17 feet, if you quote the same figure for revamping the older bridges?

Mr. ERICKSON. The reason for that is that in estimating the cost of raising those bridges that were built since 1956, a considerable portion of those bridges have been built to a figure of 16 feet and they will not have to be touched.

Mr. WRIGHT. I see.

Mr. ERICKSON. But when you go to 17 feet——

Mr. WRIGHT. You have to touch all of them, whereas in regard to the older bridges, you have to touch all of them anyway?

Mr. ERICKSON. That is right.

Mr. WRIGHT. And therefore, assuming that you have to do anything to an overpass, it costs just about the same amount to raise it to 17 feet as it would to 16 feet?

Mr. ERICKSON. That is pretty much the way it is, because if you have to go in there and raise it, whether you raise it 6 inches or a foot and a half, you still have to go in there.

Mr. WRIGHT. I understand. Thank you very much.

Mr. SCHERER. Mr. Chairman?

Mr. BLATNIK. Mr. Scherer.

Mr. SCHERER. I think counsel has started on a new and proper line of questioning, but I think we should complete these figures for the record at this point.

Let me ask you this question: What is the total cost, then, of raising all structures, bridges on the Interstate System to 16 feet. When I say "all structures" I mean the construction of the new bridges that are presently being built, the bridges that have been built since the 1956 act and all other structures that have been on the Interstate System since the 1930's; that total cost is $925 million, isn't it?

Mr. ERICKSON. That is correct.

Mr. SCHERER. Estimated cost?

Mr. ERICKSON. That is the estimated cost.

Mr. SCHERER. Before you go any further, let's get these figures. Then the additional cost of raising them to 17 feet, that is the next figure we ought to have, shouldn't we, Mr. Chairman?

Mr. BLATNIK. Yes.

Mr. SCHERER. The additional cost of raising them to 17 feet would be how much? We have $118 million increased cost for the new bridges that have not been built; $80 million additional cost of raising the structures that have been built since the 1956 act for a total of $198 million, you said it would cost the same to raise the old structures to 17 feet as it does to 16 feet; that would be an additional $480 million, so your total cost then, as I see it, would be——

Mr. WRIGHT. Take the difference between those built since and 1956 and add it to this figure and you would have it.

Mr. BLATNIK. My figure comes up to $1,124 million.

Mr. ERICKSON. $1,123 million is what we are using for the total. $1,123 million has been the estimate for raising everything to 17 feet.

Mr. SCHERER. And the additional cost from 16 feet to 17 feet, which is the thing we have before us, would be the difference then between $1,123 million and your $925 million; is that right?

Mr. WRIGHT. $200 million.

Mr. SCHERER. $198 million.

Mr. MAY. Mr. Erickson, we want to make clear, when we are talking about affected structures, we are eliminating certain structures in certain urban areas.

Mr. ERICKSON. That is true.

Mr. MAY. So affected structures would be rural and circumferential——

Mr. ERICKSON. We had in this estimate made an allowance for those routes which pass through cities that have bypasses.

Mr. MAY. Thank you very much.

Mr. SCHWENGEL. Mr. Chairman?

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. I would like to ask Mr. Erickson a question on just a little phase. This total figure of $1,123 million for the total cost, the increase is very low. I was wondering whether you knew what percentage of the total ton-mile traffic is being benefited by this increase, this improvement from 16 to 17, or 14 to 16, or the total volume of traffic that is going to be benefited by this raising?

Mr. ERICKSON. That is a pretty difficult thing to say, but I think we must recognize the fact that if the Interstate System is built to a higher verical clearance standard than we have had in the past, it will eventually affect the State laws that govern the height of vehicles.

Mr. SCHWENGEL. Under present law, the present maximums?

Mr. ERICKSON. Under present law, the only people that would be benefited besides the national defense, which is all of us, would be those haulers who haul special items such as transformers and machinery items of different kinds that require higher clearances than are normally provided on our highways.

Mr. SCHWENGEL. Would that be 1 percent of the total or less?

Mr. SIEGLE. Let me answer this from the standpoint of defense movements which we are considering here particularly. The Department of the Defense gave us this figure of 1,015 movements overheight at the time they sent us this letter of October 1, 1959, and this 1,015 has been discussed here. This 1,015 trips would represent one trip in about 75 million on the highway.

Mr. SCHWENGEL. One in 75 million?

Mr. SIEGLE. Or about one in 11 million trucks. In other words, there are 11 million trips made by trucks for each one of these overheight movements and these thousand trips we are talking about include those over 13½ feet. The 13½ to 14 feet represent 482 of those, so we are talking about an infinitesimal part of the total numbers of trips.

Mr. SCHWENGEL. You are actually talking less. We are spending then for the defense phase of this $1 billion finally, if we carry through on this 17 feet, we will say, $1,123 million for 11,000 of the total traffic so far as defense is concerned.

Mr. SIEGLE. If we were talking about this particular kind of a movement; however, the Department of Defense has made clear to us in their letter of October 1 that they are thinking of both size and weight problems and of future weapon systems and so on, and it would have to be considered on that basis rather than upon the basis of any current peacetime military movement, which is infinitesimal, but this would have to be judged rather on the basis of future military requirements and future uses of this Interstate System for something else, I would think, this being in peacetime, this 1,015 is not an impressive figure at all in relation to total number of trips.

Mr. SCHERER. Would you repeat that figure again. I wasn't paying any attention.

Mr. SIEGLE. 1,015 trips that we have been discussing here——

Mr. SCHERER. For oversize.

Mr. SIEGLE (continuing). Of trips over 13½ feet clearance, the Department of Defense moved in 1958, represents about one trip in 75 million on the highways, or about one in 1 million trips by trucks.

Mr. WRIGHT (presiding). Mr. Siegle, the standards have not been erected historically to accommodate just the majority of the traffic, have they?

Mr. SIEGLE. No, sir.

Mr. WRIGHT. Were we to set out a standard to accommodate the majority, we would discover that a majority of movements are passenger cars, wouldn't we?

Mr. SIEGLE. This is correct. I tried to make this clear by referring this to both number of trucks and to vehicles, all vehicles, so that you could get the picture both ways.

Mr. WRIGHT. If we were concerned merely with a majority of the traffic, why we could get by with a 10-foot clearance or an 8-foot clearance or maybe a 6-foot clearance.

Mr. SIEGLE. That is right. In our regular designs on highway capacities, we take the highest car, for example, as design criteria.

Mr. SCHWENGEL. Mr. Chairman?

Mr. WRIGHT. May I ask this question and then I will recognize you. Do you concur with the testimony of Mr. Leonard last week in which he stated that the number of oversize defense shipments has increased astronomically in the last 10 years and that the future prospects indicate further increases in the numbers of such shipments?

Mr. SIEGLE. I don't know about this 1,015, how it compares with similar numbers in some years prior. In either case, the figure is not an impressive figure in relation to total movements.

Mr. WRIGHT. Do you feel that the number of oversized requirements is increasing?

Mr. SIEGLE. I don't know. This, certainly we do have the new movements of the Atlas missiles which I think he said were on the order of 25 or 30 by his company over the past several years, just what proportion increase this may be, I don't know.

Mr. WRIGHT. Mr. Chacey, you have some figures, I believe, for 1959. Do they show an increase over those 1958 figures?

Mr. CHACEY. They do, sir.

Mr. WRIGHT. They do. Is it an impressive increase?

Mr. CHACEY. Well, it is pretty easy to——

Mr. SCHERER. What is the increase?

Mr. CHACEY. The total change in percent is a plus 71 for the year 1959 against the year 1958, and let me clarify this one point.

These are figures that were furnished us by our regional military traffic management offices in the Army area commands. They do not include all movements. They include the majority at least of those movements which were certified essential to national defense.

Mr. WRIGHT. Those figures indicate a 71 percent increase?

Mr. CHACEY. In the total reports of 1958 and 1959 requesting the same information, in their totals they show an increase of a plus 71 percent for the year 1959.

Mr. SCHERER. Of oversized shipments?

Mr. CHACEY. That is right, sir, of only the shipments over 13½ feet in vertical dimensions. It has nothing to do with a shipment that is overwidth or overweight.

Mr. SCHERER. The question is, How much has it increased in proportion to the total vehicular traffic or total truck traffic? That has also increased, hasn't it?

Mr. CHACEY. I think so, definitely. There isn't any question but what this could not be justified on a volume basis. It isn't a volume problem.

Mr. WRIGHT. This has never been the question.

Mr. CHACEY. Not as far as I have been concerned.

Mr. WRIGHT. Excuse me. I didn't mean to interrupt you, Mr. Scherer.

Mr. SCHERER. You were asking Mr. Siegle his opinion and isn't it your opinion also that if we increase the clearance to 17 feet, and there seems to be some evidence that we should, in view of the relative costs, isn't it your opinion, however, that as soon as we get it to 17 feet there is going to be a demand for additional oversized shipments or oversized shipments that will require a vertical clearance in excess of 17 feet, both from private carriers and from Defense?

Mr. SIEGLE. Yes, sir; that is true, regardless of what clearance we have.

Mr. SCHERER. It is the history of this matter?

Mr. SIEGLE. Certainly.

Mr. WRIGHT. May the Chair make an observation at this point. We have one other witness that we would like to hear this morning if time will permit. Mr. Schwengel had some questions he wanted to direct to the witness.

Mr. SCHWENGEL. Yes. I am very much impressed with this percent that has been referred to and I think it relates to a problem here and to some answer to the problem as we consider, especially, how we are going to finance this increased height and who should carry this load of the cost.

This is the reason I am getting this in the record. Now I have one other question I would like to direct to Mr. Erickson.

In your opinion, if we increase this to 17 feet, the vertical clearance, will there in turn be a demand to increase the minimum weights and standards for the States in the future if this happens?

Mr. ERICKSON. If you increase the vertical clearance, would there be a tendency to increase weights?

Mr. SCHWENGEL. In the States?

Mr. ERICKSON. Not necessarily in my opinion. There undoubtedly would be some agitation to increase height but I don't think it would necessarily follow that there would be agitation to increase weights materially.

Mr. SCHWENGEL. Whatever the increase, it would be reflected in a State problem because the demand then would be to increase the heights and minimum standards for all the roads and all the highways in the States and, therefore, what we do here could very well create a very serious problem for the States who are now having difficulty financing and keeping up the building and maintenance of the road system; isn't that true?

Mr. ERICKSON. I wouldn't say that would necessarily follow, Mr. Schwengel. There would be, undoubtedly, agitation to increase the vertical heights which, in the majority of the States now, is about 12½ feet. We have some that go above that, some States permit 13½. I think we have one State that has a 14-foot height, but as far as that reflecting into the weight of the vehicle, I couldn't say that would necessarily follow.

Mr. SCHWENGEL. One other question: By increasing this height to 17 feet, what percent of the traffic other than defense traffic would be benefited and what type of traffic?

Mr. ERICKSON. Well, as far as a percentage is concerned, I couldn't give you any idea on that at all. But the people who would be benefited besides the defense people would be your special haulers, your heavy haulers that haul heavy electrical equipment such as generators, transformers, and that kind of a thing that has considerable height and therefore it takes a wide body to carry it.

Mr. SCHERER. Will the gentleman yield?

Mr. SCHWENGEL. Yes.

Mr. SCHERER. Wouldn't increasing this to 17 feet also create a demand for the increasing of standard heights and widths of trucks to take advantage of this?

Mr. ERICKSON. I am sure there would be some agitation to increase the heights because I think we all recognize the fact that the truckers are continually trying to increase the permissible heights of their vehicles.

Mr. SCHERER. That means greater weights then, doesn't it?

Mr. ERICKSON. Not necessarily. The bulk hauler is the man——

Mr. SCHERER. It may mean greater weights, would it not; if you add a foot or two to a truck and fill it with commodities, it is going to increase the weight; isn't it?

Mr. ERICKSON. But the fellow who wants the higher truck is the fellow who is hired to haul the lighter commodity.

Mr. SCHERER. It is conceivable it is going to increase the weights in some instances, isn't it, if you create more space to haul loads?

Mr. ERICKSON. Not necessarily, in my opinion. In my opinion that doesn't necessarily follow.

Mr. SCHERER. It doesn't necessarily follow, but it may.

Mr. ERICKSON. It could.

Mr. SCHERER. If I get a couple hundred more cubic feet in my truck it is going to increase the weight, depending on the kind of commodity I haul, isn't it?

Mr. SIEGLE. I would like to comment on this, if I could. I think that an increase in height would affect the weight. The most constant thing that we have in transportation that I know of is the density of the cargo, that is we have a certain, using statistical terms, frequency distribution of cargo densities in different classes.

This is the stuff that is to be moved and if we are striving for the most economic means of moving this, and we are trying to tailor a vehicle and a highway to the optimum designs to move this cargo at the lowest cost per ton-mile, then we work our problem around this cargo on density so that if any time we increase the physical dimensions of the truck in which we are hauling these loads, we are increasing the average weight——

Mr. SCHERER. The potential, at least, for increasing weight is there; is it not?

Mr. SIEGLE. There is this potential and certainly a height increase, which increases the cross section, increases the weight per lineal foot of the truck and I think it definitely would have affect on the weight.

Mr. SCHERER. I certainly agree with you, and if I was in the trucking business, I would want to take advantage of that. Now when you increase the weight, not in all instances, I agree, but when you increase the weight potential at least, that means you are going to have to increase the structural design of your bridges and the pavement, will you not, to carry that weight? That is what the AASHO tests are going to show, aren't they?

Mr. ERICKSON. No; I don't think so. Not as far as the bridges are concerned.

Mr. SCHERER. It is all a question of degree, isn't it? Certainly if I double the size of my truck——

Mr. ERICKSON. Here is the thing I think we shouldn't overlook in talking about the effect of this increased height potential that will come along with the increased vertical clearance and that is that the type of haul that governs the weight, even under our present type of construction we have only 14 feet; we are held down in most States to 12½ feet. The vehicle that governs as far as weight is concerned is the fellow who is hauling gasoline, oil, steel, or lead.

Mr. SCHERER. If he hauls steel, he just piles it higher.

Mr. ERICKSON. He controls the weight and he has no concern about vertical headroom at all.

Mr. SCHERER. If he gets vertical headroom then he is going to ask for an increase in width?

Mr. ERICKSON. The fellow concerned about headroom is the fellow hauling barrels or boxes which takes up a lot of room but doesn't have much weight. But the weight of your vehicle, as far as the weight limitations that will be set by law in the future, will be governed by these haulers of heavy articles, that is, dense cargo, rather than the bulk cargo.

Mr. SCHWENGEL. Mr. Chacey is trying to answer further.

Mr. CHACEY. I am very much concerned about the implications that can be drawn as a result of a very brief discussion of this problem. One, the problem of density of cargo, as Mr. Erickson has pointed out here, is with carriers who are not at all concerned with weight. The weight has no concern whatsoever. They put on 4 feet of steel, they have overloaded the truck, they don't need 14 feet, they don't need 17 feet, it has no relationship whatsoever. So the high density cargo that affects the weight does not require the vertical clearance with the exception of possibly, in our interest, a radar component.

Now, again, from the standpoint of the weight, there are two aspects of weight and they are very important, each one of them. One is the gross vehicle weight, but a more important one is the distribution of that weight.

Weight becomes a problem only when its distribution is such that it has concentrations which exceed the capabilities of the structure to carry it efficiently.

So we are very conscious of that and that is the reason we are striving to put light axles under some of our vehicles so we can distribute that load and not create a greater destructive effect or greater deterioration on the pavement than is common for the commercial type vehicle.

Mr. SCHERER. Over the last 10 years trucks have been increasing in size; have they not? Haven't they been constantly increased in size, haven't we constantly increased the weight, hasn't that been one of the considerations or one of the things that has bothered us about the effect that these increased weights would have on pavements and bridge structures?

Mr. CHACEY. There isn't any question about a trend——

Mr. SCHERER. Have we been worrying about that uselessly?

Mr. CHACEY. There isn't any question about a trend to increase the size of commercial vehicles and there will be changes. That is one of the reasons that a Committee on the Economics of Motor Vehicle Size and Weight was established by the Research Board to study this.

Mr. SCHERER. Isn't that what we are doing in the Illinois road tests; namely, determining the effect of additional weights on roadbeds?

Mr. CHACEY. This will contribute greatly to the resolution of the problem.

Mr. SCHERER. We just have a difference of opinion in the experts here.

Mr. ERICKSON. What we are trying to find out in Illinois on the testing is what can we economically build for? In other words, how much will it cost to provide additional capability and what is the capability of these various sections that are being tested?

Mr. SCHERER. A lot of people don't worry about dollars around here.

Mr. CHACEY. At the time we determine the most economic relationship, then the laws will have to control the size and weight problem.

Mr. WRIGHT. May the Chair inquire as to the disposition of the members of the committee? It is now 5 minutes or 4 minutes until 12. It had been our hope to place one more witness on the stand this morning whose testimony probably could be taken in a very few minutes. I don't want to be in the position of cutting anybody off.

Mr. SCHERER. I think, Mr. Chairman, we should adjourn for the simple reason that this committee has it resolution on the floor this afternoon. There is on the floor also the withholding bill for city income taxes.

Mr. WRIGHT. Are there other questions at this point which you would like to direct, at this point in the record to these particular witnesses?

Mr. SCHWENGEL. I would like to ask that this question be gotten for us, and that is what percent of the private traffic, that is, non-defense traffic, will be benefited? We have the figure now that one truck or one vehicle out of every million in defense area is going to be benefited by increasing this minimum to 17 or 16 feet.

Mr. SIEGLE. Out of 75 million trips of all kinds, or 11 million trucks.

Mr. SCHWENGEL. OK. That is a little better than what I have stated. Is there some way, Mr. Erickson, for us to get an answer from you, or Mr. Chacey?

Mr. ERICKSON. Yes; there is, and what it would involve would be to go to the States and obtain from them the number of permits that they have granted in, say, a year's time, for vehicles having a height of over 13½ feet.

Mr. SCHWENGEL. Would it be difficult to find out just what type of traffic this is and who would be benefited?

Mr. ERICKSON. That will take a little more effort, but I think we could get an indication as to the type of people that are or would be benefited the most, and as has been stated before, the people who would be benefited most would be your electrical equipment haulers, oil well machinery haulers, and people in that kind of business.

Mr. SCHWENGEL. Mr. Chairman, I would like to ask that the Bureau of Roads, or someone, be directed to get this information because I think it is very valuable information and we ought to have it in the record.

Mr. WRIGHT. Without objection, I will ask that you make an effort to bring as reliable a report on this as you can for our submission in our records.

Mr. ERICKSON. There is one thing I do want to call attention to. Any information that we would get would be the data that would come from the States' permits and it wouldn't include intracity hauling or intracounty hauling.

Mr. WRIGHT. We have a gentleman who, at the request of the Congress, has been here all morning, a Mr. G. E. Germane, who is Director for Transportation Policy in the Office of the Assistant Secretary of Defense for Supply and Logistics. With the forbearance of the committee, I am going to ask Mr. Germane to come and take the stand briefly.

Thank you very much, Mr. Chacey, Mr. Erickson, and Mr. Siegle.

If Mr. Germane would come forward, we will try to be as brief as we possibly can.

If the members of the committee will remain for just a few minutes, we will try to dispose of this portion of the testimony as quickly as we possibly can do so.

Mr. SCHERER. I just want to note my objection to continuing after 12 o'clock for the simple reason I am going to be criticized for not being on the floor when this resolution is heard. If this gentleman's presence is more important than mine on the floor——

Mr. WRIGHT. Dr. Germane, would it be convenient for you to come back this afternoon, inasmuch as this committee does have a resolution of its own, which will be on the floor presumably in the session today?

Mr. GERMANE. I will be glad to return any time at your convenience.

Mr. WRIGHT. Thank you for being here and for waiting us out, and forgive us for having to be more longwinded in our questioning of the other witnesses than we thought we would be. If you could be back this afternoon we would appreciate it very much.

This afternoon we will hear from Dr. Germane and from Dr. York, as well as others. If you will be back at 2 o'clock and if the members of the committee would be reasonably prompt, we can resume at that hour.

Thank you very much.

(Thereupon, at 12 noon, the subcommittee was recessed to reconvene at 2 o'clock this day.)

AFTERNOON SESSION

Mr. WRIGHT. The Special Subcommittee on the Federal-Aid Highway Program will be in order.

Our first witness for this afternoon is Dr. Herbert F. York, Director of Defense Research and Engineering for the Department of Defense. Dr. York, I see you have already assumed the position in the witness chair. It is a pleasure to have you with us. You may proceed, Counsel.

Mr. MAY. Dr. York, for the benefit of the subcommittee would you briefly state your duties and responsibilities?

STATEMENT OF DR. HERBERT YORK, DIRECTOR, RESEARCH AND ENGINEERING, DEPARTMENT OF DEFENSE

Dr. YORK. I am responsible for supervision of all research and engineering in the Department of Defense, acting for the Secretary of Defense in this capacity.

Mr. MAY. Doctor, we have had testimony earlier in these hearings that on October 1, 1959, Mr. A. F. Bird concurred in a letter directed from General Besson to Mr. Tallamy which contained a request that the vertical clearance standard on the Interstate System be raised from 14 feet to 17 feet. When Mr. Bird concurred in that letter, was he acting on your behalf?

Dr. YORK. Mr. Bird works under my supervision. Yes.

Mr. MAY. Were you aware of the vertical clearance problem?

Dr. YORK. I did not discuss it with him at that time. No.

Mr. MAY. Did you know that the vertical clearance problem existed?

Dr. YORK. I don't really know whether I did or not. If I did, I wasn't very thoroughly aware of it, to say the least.

Mr. MAY. When did you first become aware——

Dr. YORK. That is, this particular vertical clearance question.

Mr. MAY. Yes. When did you first become aware that there was some consideration being given to raising the standard from 14 to 17 feet?

Dr. YORK. I became personally aware of it perhaps in November of last year.

Mr. MAY. What took place at that time?

Dr. YORK. Mr. McGuire, who was the Assistant Secretary of Defense for Supply and Logistics, brought the question up in a conversation we had.

Mr. MAY. Did you make any recommendation to the Secretary at that time?

Dr. YORK. No. I read correspondence which he had, a sheaf of correspondence which he had, from various persons working in research and engineering—General Schriever, General Medaris, and also some of the correspondence that he had from General Besson and others.

What was your question again?

Mr. MAY. Did you make any recommendation?

Dr. YORK. Did I make any recommendation?

Mr. MAY. Yes.

Dr. YORK. No. I read the correspondence over and said that the conclusions that he was coming up with made sense to me. So I did concur in what he was saying, but I did not make a separate and distinct recommendation.

Mr. MAY. We have had testimony that General Schriever in a letter dated August 1 of this past year, 1959, stated that the matter had been thoroughly reviewed by his staff, and he fully concurred with the increase in the 14-foot limitation to 17-foot. He also said that:

> Although the trend of the ballistic missile weapons systems appears to be toward smaller physical dimensions, there are certain present requirements that will need a 17-foot clearance—

and exhibited as an example the F–1 rocket engine, which when loaded on a flatbed trailer would easily exceed the 14-foot limitation. Then he went on to say that the impact of the development of propulsion systems in the 1, 5, and 10 million-pound range cannot be evaluated at this time. He said the present state of the art does not clearly indicate whether certain propulsion engines will take the form of larger individual units, or clusters of smaller units. Do you agree with General Schriever?

Dr. YORK. As you have read it, yes.

Mr. MAY. Could you explain to the subcommittee what the trend might be in future missile systems?

Dr. YORK. The primary trend in missiles is toward smaller missiles so that—and I am speaking now of the missile itself—the followon to the Atlas and Titan is the Minuteman, and there will probably be in the future other long-range missiles which are perhaps even smaller than the Minuteman. Almost certainly most of them will be smaller than the present Atlas and Titan.

There are possibilities that lead to bigger rockets, but these are not missiles. In the Department of Defense we have considered for use in connection with Dynasoar, and with other space systems, a rocket which would perhaps be 14 or so feet in diameter. That is the diameter of the tank; 160 inches is the number we frequently talk about. This means a 16-foot clearance, or something of that sort. But there is no firm program in this size at the present time. There are studies on things of this size.

Mr. MAY. It is then quite possible that in years to come there will be developed missiles and missile systems requiring a greater vertical clearance on highways than 14 feet.

Dr. YORK. It is possible.

Mr. MAY. Would a 14-foot limitation handicap the designers of these missiles?

Dr. YORK. The bridge—transportability, and that means all of the questions of transportation; namely, bridge clearances, gross loads, and so forth, are limitations which all of our designers have to take into account. It is one of the constraints that is put on to the design of any system. This applies not just to the missile systems, but to all sorts of things.

If the designers had a larger—had larger road clearances available, this removes one of the constraints that they have to work under, and it makes the design job easier. There is no telling what—there is no telling in what kind of equipment this might show up in the future. It might be a missle or it might be something we have not thought about at all, where a better job could be done if you could make it bigger. Removing design constraints always makes the designer's job easier, and vertical height is one design constraint.

Mr. MAY. You mentioned, Dr. York, that your responsibilities cover more than missiles. Would a 14-foot vertical clearance be some handicap in the transportation of some of the other items coming within your jurisdiction?

Dr. YORK. Yes. There are items where—there are existing items in the Army where a larger clearance would be, I don't know whether to say helpful or whether to say very useful, but there are other kinds of items where a relief in the constraints on height would be useful.

Mr. MAY. You mentioned space vehicles and you also mentioned missiles. Could you explain the difference?

Dr. YORK. A missile in our terminology is a rocket carrying a payload that goes directly from here to there along a so-called ballistic trajectory; whereas a space vehicle is something which is launched, and after reaching an altitude in the 100-mile-or-more range, it then turns over and levels out and goes into orbit.

Mr. MAY. Can you speak of the planned use of our ICBM missiles, and how they are going to be transported, and where in the country?

Dr. YORK. The ICBM missiles of the Atlas and Titan class are manufactured at a facility established for this purpose, and then they are transported to a base, and they stay there from then on. I mean, the transportation is needed for getting them from the point of manufacture to the point where it is to be installed. In other words, there is no intention to make these systems, the big missile systems, mobile.

Mr. MAY. So if we were concerned only with transportation of such items as the Atlas and Titan missiles then it perhaps would not be imperative that all of the structures to be built throughout the 40,000 miles of the Interstate System be raised to, let us say, 16 or 17 feet.

Dr. YORK. Well, it might not. In the first place, it is apparently possible to transport these things under 14-foot clearances, although with the Atlas it is not desirable if you have to disassemble parts of it and then put it back together again when you arrive at the missile site.

As to what—as to the extent over which it is important to have higher clearances in order to give a clearcut answer to that we would have to know where all our missile bases would be for the next 50 years, I gather from what I have read here; and I am sure no one knows where we are going to establish them over that period of time.

On the other hand, we do use air transportation for these, and you can possibly limit this to the question of having sufficiently high bridges between airports and missile bases, where the airport is not very far.

Mr. MAY. You mentioned that the Atlas missile can be disassembled partially for transportation purposes. Is that true?

Dr. YORK. Well, you have to take certain pieces of equipment off of the Atlas that are normally a part, but which can be removed if it is essential to do so.

Mr. MAY. These are the vernier engines on which we have had some testimony previously, to the effect that when the vernier engines are removed the Atlas missile on its transporter then reaches a height of 13 feet, 10 inches. Does that sound reasonable to you?

Dr. YORK. Yes.

Mr. MAY. And we have also had testimony that with the rig they have developed, they can lower that an additional 4 inches, which brings it down to 13 feet 6 inches.

Dr. YORK. That is right. It is a fairly complicated way of doing it. That is a possible way of transporting Atlases. It is not a desirable way of doing it.

Mr. MAY. It would be preferable if the vernier engines could be installed in the manufacturing plant.

Dr. YORK. Yes.

Mr. MAY. Dr. York, there seems to be a considerable amount of evidence that the vertical clearance standard must be raised. Could you give us your opinion on what the answer should be? How high should those clearances be built?

Dr. YORK. From the point of view of defense research and engineering, which I am speaking from, you cannot come out and say there is no way to calculate a specific height, but I can say with certainty there that the higher the better, because the lower it is, the more constraints that are placed on the weapons system designer, and we have plenty of evidence that on systems which exist, as opposed to systems under development, that 14 feet to say the least is extremely—it makes it extremely awkward.

Mr. MAY. Are we saying that the vertical clearance standards should be as high as the country could afford to spend for such structures?

Dr. YORK. Well, yes. I would like to say I do concur with the Deputy Secretary of Defense's statement that 16 feet looks like a good number, considering everything. From a research and engineering point of view, the higher the better.

Mr. MAY. So 17 feet, proposed back last October, would look even better to you?

Dr. YORK. Yes. From a development point of view, the higher the better, and 17 is higher than 16. But that is just one of many possible points of view here. I would not recommend 17 feet, or any other number, solely because of the development problem.

Mr. MAY. Thank you very much, Doctor. That is all the questions I have.

Mr. WRIGHT. Are there any questions on my right?
(No response.)
Mr. WRIGHT. On my left? Mr. Cramer?
Mr. CRAMER. I have one question. I am glad to see you again, Doctor. I had the privilege of seeing you in Amsterdam at the Outer Space Conference last year, and I am glad to see you again. Would you indicate, Doctor, does the solid versus liquid fuel situation development have any bearing on this question of height?
Dr. YORK. It does not have—the solid missiles in general are smaller than the liquid missiles. Now, it is conceivable that somewhere down the road we might end up with solid boosters that are bigger than our present liquid boosters. At the present time the solid boosters are generally smaller.
Mr. CRAMER. I gather from your statement then that you concur in the Assistant Secretary of Defense's findings that from the standpoint of the overall picture, 16 feet could accommodate the foreseeable development of missiles?
Dr. YORK. It appears that it would.
Mr. CRAMER. I have no further questions.
Mr. WRIGHT. Mr. Baldwin.
Mr. BALDWIN. Following that up for 1 minute further, Doctor, I take it then from the standpoint of your knowledge that you are personally satisfied with the 16-foot clearances that now have been put into effect?
Dr. YORK. I would be satisfied with 16-foot clearance, yes, sir.
Mr. BALDWIN. And I take it from that that with those clearances you would foresee that the job that has to be done, from the standpoint of transporting those missiles that are now either in construction or in the planning stages, can be taken care of with a clearance of 16 feet?
Dr. YORK. Yes. It might be awkward in some cases, or very difficult, but I don't foresee that it would be impossible.
Mr. BALDWIN. You say it might be awkward or difficult. Would it be awkward or difficult to the extent that you feel it would create such a serious national problem that steps should be taken to revise these standard heights upward?
Dr. YORK. Beyond 16 feet?
Mr. BALDWIN. Yes.
Dr. YORK. No.
Mr. BALDWIN. That is all, Mr. Chairman.
Mr. MAY. You mentioned the vertical clearance as being a constraint, Doctor, and you also mentioned that 17 feet would be less constraint than 16 feet.
Dr. YORK. Yes, and 18 would be less than 17. I mean, there isn't any sharp cutoff in these things.
Mr. COOK. As to the target date of 1975 that was mentioned in the act, do you feel this estimate of 16 feet would be sufficient until that year?
Dr. YORK. I think so, but it is a question of how good my crystal ball is.
Mr. WRIGHT. Mr. Robison.
Mr. ROBISON. Dr. York, in the missile field, as I understood you to say, the trend or probable trend will be to a more streamlined or a

sophisticated missile, so that mobility will be a little easier problem to solve in the future than now.

Dr. YORK. The direction we are going in, our second generation ballistic missile is considerably smaller than our first generation missile, and it is smaller in all aspects—diameter, length, and weight, and so on.

Mr. ROBISON. I can see why mobility is extremely important in the missile field. Is it equally important in the space vehicle field, in your opinion?

Dr. YORK. I think that it is not as important in the—it is not of the same crucial importance in the space field as in the missile field, but it is—we speak of mobility and then we speak separately of transportability, and they are not the same. When we say or when we talk about a mobile system, what we mean is a system which is being moved around all the time—not just being moved from a point of manufacture to a point of installation.

Mr. ROBISON. Pardon me. Would this be comparable to the suggestion that the Minuteman might be transported by rail?

Dr. YORK. Yes. When we speak of the mobile Minuteman we are talking about putting it on trains, and once it is on these trains these trains will be in movement all the time. Now "all the time" does not mean 168 hours every week, but the fact that these are in motion much or most of the time means that the enemy does not know where they are. This kind of mobility is important in connection with a weapons system, which you know the enemy would target if he could.

In the case of missiles, which constitute our strategic deterrent, mobility is one of the things we are working very hard to achieve. That, in fact, is the reason why we are making our missiles smaller, so that we can make them mobile. In the case of almost any system you can conceive of, transportability is important, and certainly in the case of space systems you are going to have to concern yourselves with how you are going to get it from the factory to the launching point. That is transportability.

I know of no space systems today where mobility is—in the sense I was defining it earlier—is an essential part of the system. It is possible that some might come up, but it is not at the present time.

Mr. ROBISON. One more brief question, sir: I understand that the railroads have done a good job of transporting the Redstone systems in a disassembled state, perhaps in three segments, as I have been told. Who makes the decision as to whether a completed missile can be transported in an assembled or disassembled state?

Dr. YORK. Well, there are transportation authorities in each of the services that deal with this particular problem. Our design agencies are responsible for considering transportability in making the design of any of these weapons systems.

Mr. ROBISON. Is it a design problem, mainly, as to whether it can be shipped disassembled?

Dr. YORK. Sure, because the simplest way to make something would be to have it so it is all assembled in one piece once and for all, and then to move it all around. But for a variety of reasons you ship things broken down. Not merely—sometimes it would have to do with this vertical clearance question and other times it has to do with the gross weight, and so on.

Mr. MAY. Doctor, you mentioned that these other items or items other than missiles came within your jurisdiction. Would it be necessary to raise the 14-foot vertical clearance standard to accommodate some of these other oversized items?

Dr. YORK. Well, there are for example a number of items which the Army has in its inventory, or has under late stages of development, which when placed on transporters would require more than 14 feet if transported on this highway system, and so on.

Mr. MAY. That is all.

Mr. WRIGHT. Dr. York, you have testified that transportability is one of those criteria considered in the design of a new defense weapons system. Is it conceivable that in order to achieve the desired transportability we might on occasion have to sacrifice more desirable design characteristics?

Dr. YORK. Yes. Sometimes—yes, you would.

Mr. WRIGHT. You have said then that in the light of your responsibility as Director of Defense Research and Engineering you would like to see the maximum clearances that we reasonably feel we could make available as a nation so as to limit as little as possible the latitude of the designers and engineers who work on these new projects. In the light of that you said that 17 feet would be better than 16 feet, and 18 feet would be better than 17 feet, and 16 certainly better than 15 feet, but you believe that at this particular stage 16 feet is probably an adequate minimum standard.

Dr. YORK. Yes, I do believe that. I do believe so.

Mr. WRIGHT. In the light of the question Mr. Cook just asked, since it was the responsibility of the Congress with the Bureau of Public Roads and the Defense Department to design a system of highways adequate to meet the foreseeable commerce and defense needs for the year 1975, do you foresee any reasonable likelihood that against that date we might need even greater standards than we foresee now?

Dr. YORK. I do not foresee that we would need greater standards than we foresee now. I think I could foresee that it would be convenient if we had greater standards, but I don't foresee a need for them.

Mr. WRIGHT. You do feel we need a higher standard than the present or the recent 14-foot standard?

Dr. YORK. I think it would be highly desirable to have it higher than 14 feet.

Mr. WRIGHT. Did you, 10 years ago, for instance, foresee that we would need a higher standard than 14 feet?

Dr. YORK. I didn't have anything to do with it 10 years ago.

Mr. WRIGHT. How long have you had something to do with it?

Dr. YORK. I have been involved in work that would be connected with this in a major way for about 2 years.

Mr. WRIGHT. Were you, 10 years ago, involved in research and engineering on projects of this type?

Dr. YORK. I was, but it was in nuclear weapons, and they don't get this big.

Mr. WRIGHT. Did you at that time foresee the development of such design characteristics as have been embodied in the Atlas missile and these other weapons systems we discussed?

Dr. YORK. Ten years ago, no. Six years ago, yes.

Mr. WRIGHT. Six years ago you did? In 1954?

Dr. YORK. That is when I first got into—that is when I first got into the missile program.

Mr. WRIGHT. Did it occur to you in 1954 that we might have a need for greater clearances to permit transportability of these weapons?

Dr. YORK. I didn't get into that problem. No.

Mr. WRIGHT. Not having foreseen that long ago, the developments that have come about, do you think——

Dr. YORK. I did not foresee it in terms of clearance. Let me put it that way.

Mr. WRIGHT. I understand.

Dr. YORK. I did at that time foresee—I don't know how good a word that is—but if you had asked me 6 years ago were rockets going to be bigger than 10 feet in diameter, which is the size of the present Atlas, I would have said, "I think so." That is the foreseeing of the transportation problem. I just was not really involved in that end of the problem at all.

Mr. WRIGHT. You were not thinking about it in terms of transportation in those days.

Dr. YORK. That is right.

Mr. COOK. Dr. York, did I understand you to testify a few moments ago that there was a difference between mobility and transportability?

Dr. YORK. Yes.

Mr. COOK. Did I understand you to say that there is no current problem with regard to mobility in connection with our present efforts?

Dr. YORK. No. If I did, I didn't mean to say that.

Mr. COOK. I may have misunderstood you.

Dr. YORK. With the Titan and the Atlas, these two rockets are so big and so cumbersome, that they are not mobile. There are no plans for making them mobile and this is for reasons which go far beyond questions of any bridge clearances, and things of that sort. They are just simply too big and cumbersome and complicated. So they are not mobile.

At the present time we do not plan on making them mobile. We do, however, regard the mobility in a missile system as being something which we very much want, especially in the latter half of this decade. Therefore we are building another missile and designing another missile called the Minuteman with mobility in mind. I mean, it is a smaller missile, and smaller in every dimension and less complicated and less cumbersome and more rugged, so that it is mobile from these points of view, as well as from just the size point of view.

Now we are planning railroad mobility rather than road mobility, but you might very well want to go to road mobility. I just could not say.

Mr. COOK. I want to read to you, Dr. York, from a letter sent by Major General Besson to Hon. B. D. Tallamy, Federal Highway Administrator, and see whether you agree with this statement as to defensive units and their mobility.

He says as follows:

As guidance systems improve, random displacement of defensive units will become increasingly necessary. With observation satellites and the flight time of an enemy ICBM only 30 minutes from launch to target, this accuracy will make

displacement imperative. Under such conditions, to insure adequate antimissile defense of the continental United States, it is believed the antimissile system will have to be mobile. Currently prototype components of this system are so large that even limited mobility is questionable. However, every effort is being made to develop more mobile equipment, and, as the state of the art progresses, this will be accomplished. To benefit from this progress and secure the necessary flexibility, highways must provide a proportionate share of the needed mobility.

Would you agree with that statement, sir?

Dr. YORK. Well, he said quite a bit all in one place there. I think if you take his original assumptions, which occur in the first part of that, then I agree with the latter part. We do seek—he points out in there we do seek to have mobile systems—I have forgotten his words—so we can displace them, and so on, as a means of protecting them. The reason why we have to do this is because we anticipate that the enemy's accuracy, or our own accuracy, can and will continually get better so that the stationary target, even though hard, becomes more and more vulnerable, and we have to move in the direction of mobility. As an example of that we are going from Atlas and Titan to Minuteman.

He goes on to say you will want the anti-missile-missile system also to be mobile. That may very well come about, but it is not part of the—there is no program whose objective it is to produce a mobile anti-missile missile at the present time.

There are components which are large. There are radars, and things like that, which are much larger than these dimensions we are talking about here. The antimissile missile itself, that is, just the missile, is small enough so that there is no clearance problem as far as the missile intrinsically is concerned. Inasmuch as nothing has been designed in the way of a rocket launcher for the system, I cannot speak very well to the question of how high, or what kind of dimensions that would have; but broadly speaking I concur with what General Besson said.

Mr. COOK. You will agree then, Dr. York, I understand, that there are parts of the entire mechanism, that is, other than the missile itself, which would be of such size?

Dr. YORK. Yes. But many of these are enormously bigger than 15 feet.

Mr. COOK. And you would have to take it along with you to make this missile mobility a possibility, wouldn't you?

Dr. YORK. Well, since it has never—since a mobile anti-missile-missile system has never been invented, even really in concept, it is pretty hard to say what you would have to do. The radar—as to whether you would have to take radars with you or not would depend on the operational plans you had for this. Whether you wanted to move these things hundreds of miles, or merely tens of miles. If you wanted to move them tens of miles you could leave the radars where they were and just transport the missile and computing system and then, of course, the radars become soft.

Mr. COOK. This letter is the one in which General Besson was advising Mr. B. D. Tallamy that they should move from 14 feet to 17 feet, and this paragraph I have quoted is one of his reasons for recommending this change from 14 feet to 17 feet.

Dr. YORK. Well, if General Besson, or someone in his command has in mind transporting the radars which are an essential part of an anti-missile-missile system, I am certain that if these radars—that

every foot bigger you can make it the better off you are. On the other hand, there is no serious plan afoot to do that.

Mr. COOK. Your office did concur in this recommendation of General Besson's, that the vertical clearance be raised from 14 feet to 17 feet, in 1959, didn't you?

Dr. YORK. Yes, but—yes, but that did not mean we concurred in all of his statements about what future plans for particular missile systems might be. We do concur that mobility is an important thing for the future and that this means you may end up with systems which are—if made bigger than we can now make them, would be better.

Mr. COOK. That is all.

Mr. WRIGHT. Thank you very much, Dr. York. There is some confusion, the Chair might observe, as to the meaning of the bells. Were there three bells?

Mr. ROBISON. Yes.

Mr. WRIGHT. A quorum call is in progress. The members of the committee may feel free, of course, to go on and answer the quorum. We have another witness we might hear rather quickly, and I am going to suggest that we hear Dr. G. E. Germane at this time, who is Director for Transportation Policy in the Office of the Assistant Secretary of Defense for Supply and Logistics. Following the testimony by Dr. Germane, which perhaps will consume not more than 5 minutes, I am going to suggest that the committee recess, in order that all of us may appear on the floor for the quorum call, to reconvene at 3:15, which should give all of us time to go over and get back.

Thank you very much, Dr. York, for having shared your information and experience with us. It is nice to have you with us, Dr. Germane. If you will proceed with the questioning, counsel.

Mr. MAY. Doctor, would you state the position you now hold?

STATEMENT OF DR. G. E. GERMANE, DIRECTOR FOR TRANSPORTATION POLICY, OFFICE OF ASSISTANT SECRETARY OF DEFENSE, SUPPLY AND LOGISTICS, DEPARTMENT OF DEFENSE

Dr. GERMANE. I am the Director for Transportation Policy in the Department of Defense and I have held this position since September 21, 1959. For several years prior to that time I was employed by Stanford University.

Mr. MAY. Could you briefly describe your duties and responsibilities?

Dr. GERMANE. Under the supervision of the Assistant Secretary of Defense for Supply and Logistics, I am responsible for transportation policy in the Department of Defense.

Mr. MAY. Doctor, we have had information supplied by Mr. Chacey that the letter which General Besson directed to Mr. Tallamy of the Bureau of Public Roads, which requested that the standard be raised from 14 feet to 17 feet, that letter being dated October 1, 1959, was concurred in by you. Can you tell us how that concurrence came about?

Dr. GERMANE. Yes, sir. This concurrence, or the request for concurrence was discussed with me by a representative from Mr. Chacey's office and a member of my own staff. The official letter was presented, along with backup material which made good sense to me. The paper

was fully coordinated with the military departments concerned and also had been coordinated with the Office of Director, Research and Engineering.

Based on the backup material and the briefing which I received from the representative of General Besson's office and my own staff, I believed it would be desirable to concur in the recommendation.

Mr. MAY. When you concurred in that letter, were you acting on behalf of the Assistant Secretary of Defense, Perkins McGuire?

Dr. GERMANE. I was.

Mr. MAY. Was Mr. McGuire aware of the vertical clearance problem at that time?

Dr. GERMANE. Not through any direct contact with me. He may have been aware from other sources.

Mr. MAY. Did you discuss the matter with the Secretary?

Dr. GERMANE. No. There are many matters of this type which come up repeatedly which the Secretary expects us, his Directors, to act on after review, and in our best judgment; and I considered this to be one of those matters.

Mr. MAY. We understand, and we have received some testimony that the Chief of Transportation has been delegated to speak officially for the Department of Defense in relation to these matters. Is it true that there was no requirement for the Chief of Transportation's Office to consult with you on this matter?

Dr. GERMANE. I have not checked into the matter of the administrative directives in this connection, but I believe that that statement is right.

Mr. MAY. Dr. Germane, would you have signed the letter on October 1 if you had known that the additional cost resulting from the change in standards might be charged to the Department of Defense?

Dr. GERMANE. Yes, sir. I would have signed that letter. It appears to me that this was a matter of defense, and to the best of my knowledge the element of cost was not considered as a controlling factor in the determination of the policy.

Mr. MAY. Do you recall discussing this situation with us on the staff, December 3, that is, this past December 3?

Dr. GERMANE. I recall discussing it with you. Yes, sir.

Mr. MAY. Do you recall how you answered that question at that time?

Dr. GERMANE. No, sir.

Mr. MAY. When we asked you if you would have signed the letter had you known that the cost might be charged to the Defense Department? At that time, according to our notes, Doctor, you said that you would not have signed it and that you would have had to look into the matter in detail to be sure of the necessity, and you would have to weigh the cost against the need for something else. Do you recall that?

Dr. GERMANE. No, sir.

Mr. MAY. Did you call Secretary McGuire's attention to the fact that you had concurred in the letter?

Dr. GERMANE. No, sir.

Mr. MAY. Have you reviewed this matter since January of this year?

Dr. GERMANE. Yes, sir.

Mr. MAY. And what were the results of that review?

Dr. GERMANE. The results of that review were that I concurred in the revised recommendation that the minimum clearance be 16 feet.

Mr. MAY. On what did you base your second concurrence, Doctor?

Dr. GERMANE. That after a careful review, at the request of the Secretary of Commerce, it was determined that although 17 feet would be desirable, 16 feet could meet all of the known or foreseen requirements of the Department of Defense.

Mr. MAY. That is all.

Mr. WRIGHT. Are there any other questions? Thank you very much, Dr. Germane.

Mr. MAY. One more point, Doctor, if you will wait.

Mr. WRIGHT. Just one more moment.

Mr. MAY. When the restudy came about in this past December or January, did you prepare the, or help to prepare the, letter which Secretary McGuire was to send back to the Secretary of Commerce?

Dr. GERMANE. I discussed this matter at length with Mr. McGuire. I did not, however, draft the letter for him.

Mr. MAY. Did you participate in the drafting of the letter?

Dr. GERMANE. I discussed the matter in detail. I went over the proposed draft, but I did not prepare the draft.

Mr. MAY. Were there two drafts that were prepared at that time?

Dr. GERMANE. I don't know.

Mr. MAY. Did you participate in the preparation of the draft answer justifying 17 feet?

Dr. GERMANE. The 17 feet letter was the one of October 1, I believe, which you mentioned earlier, prepared by Major General Besson. I did not participate in the development of the draft of that letter.

Mr. MAY. I was thinking of another draft prepared in this past December or January, justifying 17 feet.

Dr. GERMANE. I don't believe I am familiar with the draft to which you refer. I discussed with Mr. McGuire on various occasions the general topic of the vertical clearances and the minimum standard which should be adopted, and the reasons and considerations involved, but I did not prepare a draft of a letter on 17 feet at any time.

Mr. WRIGHT. Thank you very much, Dr. Germane. There is an automatic rollcall and the Members of Congress have to be on the floor at this time. The committee will stand in recess until 20 minutes after 3.

(Whereupon, at 2:57 p.m., a recess was had until 20 minutes after 3.)

Mr. BLATNIK. The special Subcommittee on Federal Aid to Highway Program will resume its public hearing.

Our next witness is Col. E. C. Hedlund, Director of Transportation, Office of Deputy Chief of Staff, Materiel, Department of the Air Force.

Colonel, we welcome you. Will you please take a seat.

STATEMENT OF COL. E. C. HEDLUND, DIRECTOR OF TRANSPORTATION, OFFICE OF DEPUTY CHIEF OF STAFF, MATERIEL, DEPARTMENT OF THE AIR FORCE

Mr. BLATNIK. Mr. May.

Mr. MAY. Mr. Chairman, I will ask Mr. Constandy to handle this matter.

Mr. CONSTANDY. Will you describe the function or the duties of the Director of Transportation of the Air Force?

Colonel HEDLUND. As Director of Transportation for the U.S. Air Force, I am responsible for the plans, policies, and promulgation of them, according to which we support the Air Force units worldwide with the best possible transportation support we can give them.

Mr. CONSTANDY. Are you also concerned with the interest of the Air Force in the development of the Nation's highway program?

Colonel HEDLUND. Yes, indeed.

Mr. CONSTANDY. Can you tell us how that is implemented in your office?

Colonel HEDLUND. Will you repeat the question?

Mr. CONSTANDY. Tell us how that is implemented through your office.

Colonel HEDLUND. My office has a general concern with respect to aspects of the Federal highway program which will affect our ability to provide transportation support for Air Force units. As a part of the general responsibility of my directorate, I have a segment having a continuing interest in that area. We work very closely with the other services, of course.

Mr. CONSTANDY. Colonel, are you familiar with the request made by the Chief of Transportation on March 18, 1958, to review the respective, or the Air Force, needs of vertical clearance standards and General Winn's reply on April 30, 1958?

Colonel HEDLUND. Yes, I am.

Mr. CONSTANDY. Mr. Chairman, I feel it would be worth reading this letter by General Winn on that date. Do you have a copy of that with you, Colonel?

Colonel HEDLUND. Yes, I do have.

Mr. CONSTANDY. Could I ask you to read that, please.

Mr. SCHERER. What is the date of this?

Colonel HEDLUND. This is a letter written on April 30, 1958, a memorandum for Chief of Transportation, Department of the Army. The subject is "Highway Clearance Standards."

1. Reference is made to your letter TCATE dated March 18, 1958, subject as above.

2. There are no known approved development plans or programs that contemplate missiles or supporting equipment of such a size that would require an increase to present vertical clearance standards for the National System of Interstate and Defense Highways. There is some outsize equipment requiring movement over highways needing vertical clearances up to 16 feet. However, these cases are not national in scope but would infrequently occur and would undoubtedly be limited to local moves within one State. Examples of items requiring clearance higher than present standard are: engine test chamber, 15 feet 6 inches diameter, circuit breakers, 16 feet, and valves, 15 feet; possible equipment to be moved on Tennessee highways serving the Arnold Engineering Development Center, Tullahoma, Tenn. Similarly, a 14-foot standard could adversely affect missile and aircraft movements over the highways to and from the Los Angeles area and the Flight Test Center at Edwards Air Force Base, Calif. A review of requests for highway waivers and clearances on file at Headquarters Continental Air Command, Mitchel Air Force Base, N.Y., indicates many were for vertical clearances from 14 feet 6 inches up to and including 15 feet 4 inches. It is impossible to forecast the exact dimensions of weapons systems after 1970; therefore, impracticable to estimate a verticle clearance standard that would be optimum for the 50-year use expectancy of highway grade-separation structures.

3. In view of the foregoing, it is recommended that consideration be given to increasing the present 14-foot clearance standards for future construction of the National System of Interstate and Defense Highways to 16 feet.

RAYMOND L. WINN,
Brigadier General, U.S. Air Force, Director of Transportation, Office, Deputy Chief of Staff, Materiel
(For the Chief of Staff).

Mr. CONSTANDY. Now, Colonel, did that represent official Department of the Air Force position at that time?

Colonel HEDLUND. As far as I know, yes, sir.

Mr. CONSTANDY. Thereafter, on January 15, 1959, after reviewing the draft letter of Mr. Chacey, which was first proposed by the Bureau of Public Roads, Mr. Earl Williams of your office advised that the Department of the Air Force would agree to a proposal of Department of Defense position of 17 feet although it was a compromise from the position of 16 feet. Does that statement by him represent a change in the Department of the Air Force position at that time?

Colonel HEDLUND. I believe the statement to which you refer presumably was made at a meeting on or about the 15th of January. The feeling of the Air Force as indicated by Mr. Williams was that since a recommendation of 17 feet certainly covered what we considered to be a known requirement with current hardware of 16 feet, we had no real reason to object to it. We had a feeling that we wanted something more than the 14. We felt we could put our finger on something up to 16. We certainly expressed a view all along that we favored the availability of some growing room in this area, and subsequently concurred with the 17-foot proposal.

Mr. CONSTANDY. Consistent with that, on September 30, 1959, Mr. Williams and Colonel Guilbert, also of your office, signed concurrences to General Besson's letter requesting the Bureau of Public Roads to change the standard to 17 feet; is that correct?

Colonel HEDLUND. Yes, I believe so. The date on that letter is October 1, 1959.

Mr. CONSTANDY. Were you aware of that action at the time?

Colonel HEDLUND. I was out of town on that particular date and for I believe 2 days after that. I was made aware of their action when I returned. I had no reason to object to it again since it did recognize the philosophy of a requirement beyond 14 feet.

Mr. CONSTANDY. Now, thereafter, the matter was again reviewed by the Assistant Secretary of Defense for Supplies and Logistics, Mr. McGuire. Did you attend a meeting relative to that on November 24, 1959?

Colonel HEDLUND. I attended a meeting on or about that time.

Mr. CONSTANDY. Will you tell us what the discussion was at that time?

Colonel HEDLUND. Excuse me, sir?

Mr. CONSTANDY. Will you tell us what the discussion was at that time?

Colonel HEDLUND. Well, the discussion was on this general subject of vertical clearance as associated with the Federal highway program. The basic purpose of the meeting was to determine whether in fact we had a good proposal with respect to the 17-foot recommendation, whether there was certain information that had not been known heretofore that might affect this. As far as I know, the meeting was called

for the express purpose of reassessment of the vertical clearance proposals.

Mr. CONSTANDY. In that connection, were you asked to do something—that is, in connection with this reassessment?

Colonel HEDLUND. Well, as a result of the meeting, as I recall, I was asked to reassess the Air Force proposal with respect to vertical clearance and make those points known to General Besson's office, Office, Chief of Transportation, Army.

Mr. CONSTANDY. In connection with that letter, expressing your current views and recommendations, can you tell us what you did after the November 24 meeting?

Colonel HEDLUND. Well, I did just that, and I believe it was on the——

Mr. CONSTANDY. Leading up to your writing the letter that was requested, did you reevaluate it within your own office?

Colonel HEDLUND. Yes, we reevaluated it within our own office and since there had been a lot of talk about missiles in this area, we reevaluated it with our Air Research and Development Command. As I recall, we touched base also with our Continental Air Command which has basic responsibility for exceptions to clearances within the United States.

Mr. CONSTANDY. Were there replies consistent with the letter that you subsequently did send?

Colonel HEDLUND. I want to be sure I understand your question.

Mr. CONSTANDY. The replies that you received from these other agencies with whom you checked, were they consistent with the letter that you sent on December 7; in other words, did your December 7 letter reflect not only the position of your own office, as expressed to the Chief of Staff of the Air Force; did it also adequately explain the feeling of your subordinate agencies?

Colonel HEDLUND. Well, very definitely. There is just one United States Air Force and our only job is to represent the entire entity as best we can and we thereby considered very seriously the recommendations of our major commands and to the best of my knowledge this letter on December 7 did just that.

Mr. CONSTANDY. You mentioned that there had been some concern over missiles. Were you as much concerned with the restrictive condition of the 14-foot vertical clearance on the National System of Interstate and Defense Highways for just the missiles, or were you concerned with other things?

Colonel HEDLUND. My job as Director of Transportation is to insure an ability to provide transportation support across the board, not only for missiles and the missile program, but all of the hardware that we have in the Air Force. And in taking a look at the outsized pieces of hardware which we had moved beyond 14 feet, they fell into the areas generally other than missiles. Obviously, the missile is a dramatic thing at the moment and obviously it does pose some surface transportation problems but I would like to seriously call your attention to the fact that we consider equally important, if not more so, other types of equipment which must be moved.

Mr. CONSTANDY. Could you expand on that a little bit? Will you tell us what some of the other pieces of equipment that you might possibly have to move would be?

Colonel HEDLUND. Well, I think the letter which I read referred to some of them. We have engine test chambers, associated with new engines which are made in one piece and are large; radar and radome, associated not only with BMEWS program but with other programs as well; circuit breakers, which, as far as I know, is applicable to the Tennessee installation. A new item of equipment, casings for the silo associated with the Minuteman——

Mr. CONSTANDY. Will you explain what the silo is, Colonel?

Colonel HEDLUND. Well, I don't think it is classified. The silo is part of the fixed installation of one of our modern weapon systems. I cannot go into detail in this open hearing.

Mr. CONSTANDY. Do you have with you the letter you sent on December 7, 1959?

Colonel HEDLUND. Sir?

Mr. CONSTANDY. Do you have with you the letter of December 7, 1959?

Colonel HEDLUND. I have it. This is a letter to General Besson?

Mr. CONSTANDY. That is correct. That is dated December 7, 1959.

Colonel HEDLUND. I have a poor copy but it appears to be the 7th of December.

Mr. CONSTANDY. Could you read that, Colonel?

Colonel HEDLUND. Very well. The subject is: "Highway Clearance Standards." It is to Maj. Gen. Frank S. Besson, Jr., Chief of Transportation, Department of the Army.

EXHIBIT 39

1. Reference November 14, 1959, briefing in the office of the Assistant Secretary of Defense (S. & L.) regarding vertical clearances on the National System of Interstate and Defense Highways and the memo dated April 30, 1958, from this Headquarters to you, subject: "Highway Clearance Standards."

2. Experience during the past 18 months indicates the existing hardware moved for the Air Force can be accommodated with a vertical clearance of 16 feet. The Arnold Engineering Developmental Center, Tullahoma, Tenn., anticipates 10 shipments will be made in the immediate future and 60 shipments in the next 5 years requiring clearance over 16 feet for such items as valves, bulkheads, elbows, diffusers, and modification support for test cell J3——

Mr. SCHERER. How many movements in excess of 16 feet in the next 5 years, did you say, Colonel?

Colonel HEDLUND. I shall repeat that last sentence:

* * * The Arnold Engineering Development Center, Tullahoma, Tenn., anticipates 10 shipments will be made in the immediate future and 60 shipments in the next 5 years requiring clearance over 16 feet for such items as valves, bulkheads, elbows, diffusers, and modification support for test cell J3. These shipments will be from New York, New Jersey, and Pennsylvania points to Tennessee. The Atlas missile, when moved with vernier engines installed, will have a height of 15 feet 3 inches.

3. The total of 940 clearances for oversized shipments were issued by the Military Traffic Management Agency to the military services in 1958 for movements by commercial carriers. Of these, 49 percent required clearance beyond 14 feet and a significant number, 17.7 percent, required 15 feet and over. In addition, a vertical clearance of 16 feet is current construction criteria of approximately 30 percent of the States.

4. In view of the foregoing, a clearance criteria of 16 feet appears justified to provide a factor for growth and allow for flexibility of future weapon systems, the Air Force concurs that a clearance of 17 feet as recommended by the Department of the Army is desirable. However, should the cost of providing in-

creased clearance be too great, the Air Force may be forced to accept any transportability risk inheret in the lower height.

EARL C. HEDLUND,
Colonel, U.S. Air Force, Director of Transportation,
Office of Deputy Chief of Staff Materiel
(For the Chief of Staff).

Mr. CONSTANDY. Now that letter is signed by you; it is expressing officially for the Chief of Staff of the Air Force, is it not?

Colonel HEDLUND. That is correct.

Mr. CONSTANDY. An illustration which is given in paragraph 2, movement on behalf of the Air Force for the Arnold Engineering Development Center, was only intended to be illustrative of the type——

Colonel HEDLUND. Those were only illustrative items.

Mr. CONSTANDY. Now, do you know, in paragraph 4, do I understand correctly your current need for 16 feet clearance is with the equipment that you now have?

Colonel HEDLUND. Yes; we feel that 16 feet clearance would aid us and with the equipment and hardware presently available, we feel that it would give us considerable increased flexibility and make it easier to provide better transportation support. Now, in addition, we don't consider ourselves smart enough to know what we are going to have to work with in the future, and it is only logical, we feel, that we should have some growing room, and historically this has been the case. It is nice to leave yourself a little maneuvering room.

Mr. CONSTANDY. Are you expecting to grow above 16 feet?

Colonel HEDLUND. That is why we had no objection to the 17 feet and still do not have.

Mr. CONSTANDY. You feel, should the 17 feet not be provided, that the Air Force would be accepting some transportability risk; is that correct?

Colonel HEDLUND. I suspect the answer to that would have to be yes, but to what degree, I would be unable to define.

Mr. CONSTANDY. Now, Colonel, could you tell us something about the Air Force's plans of utilizing highway transportation against air transportation for the Atlas missile?

Now, you have been using highway transportation for delivery of Atlas both from the manufacturing site to the test center at Cape Canaveral, and we understand they are using highway transportation from the operational base to the launching sites for those missiles which will be operational. Has the Air Force made any movements by air of the Atlas missile?

Colonel HEDLUND. Yes, sir, we have. First off, I would like to say that we tried to build into our missile family an inherent air transportability characteristic. We would like to have the flexibility of being able to move our missiles by all of the available media of transportation. To answer your question with respect to the Atlas, all of the movements up to date except two, to the best of my knowledge, have been by surface transportation, have been over-the-road transportation.

We had no capability to provide airlift for the Atlas missile until recently, as a result of availing ourselves of the first modified C–133 transport which gave us this capability.

Mr. CONSTANDY. At the moment do you expect air transportation of the Atlas missile will become the common mode or do you expect it will only supplement highway transportation?

Colonel HEDLUND. I suspect that both methods will continue to be used.

In the field of traffic management, you never try to tie yourself down to a particular mode because many times a decision is dependent upon the circumstances existing at the time the movement is to be made.

Certainly we will continue to use surface transportation from the source of production to an airfield, and from an airfield to final site and I suspect over shorter hauls, we would probably use it enroute.

Mr. CONSTANDY. Now are there some disadvantages to moving it by air?

Colonel HEDLUND. Well, that is a difficult question to answer because you have to compare it with something else.

Mr. CONSTANDY. Comparing it with highway transportation, you recognize the fact that movement by air on the one hand would be quicker for the time in transit?

Colonel HEDLUND. Well, it is a task to load and unload the weapon because the clearances are very, very marginal within the fuselage, especially as you go up over the hump on entry in the rear clamshell opening.

There are also certain aspects related to the maintenance of the proper internal pressure in the weapon itself which must be maintained.

Mr. CONSTANDY. Would you explain that a little bit?

Colonel HEDLUND. Well, I think it is a well-known fact that the Atlas missile is not self-supporting insofar as the structure is concerned. It must be filled wtih something or kept pressured in order to maintain its physical posture and therefore in transit, it must be maintained at a constant air pressure inside.

This is true whether it is over the road or in the air or what have you.

I only say that as you fly an airplane into altitudes of less dense air, your relevant pressure inside compared to the outside pressure varies and does provide a task to be solved. It has been solved, but I am just trying ot point out that it is somewhat complicated.

Mr. CONSTANDY. Is there any corresponding danger in raising an item which is filled with compressed gas as you increase the altitude and decrease the external pressure?

Colonel HEDLUND. I would not say there is any danger, I think you have to have a system that gives you the pressure differential that you need.

Mr. CONSTANDY. It does present a problem that you have to overcome.

Colonel HEDLUND. Yes; you must overcome it. As far as I know, it has been overcome.

Mr. CONSTANDY. Our information is to the effect that some 50 C–133's have been built to date and that the last 15 only have been modified to permit the transportation of an Atlas missile. Is that correct?

Colonel HEDLUND. A total of 50 C–133's have not been built as of this point in time. The total program of buying for the Air Force is a total of 50 C–133's and I do not believe the last one will be delivered until early in 1961, February or March. The last 18, again I am relying on memory, will be modified with the larger clamshell doors to allow for carrying of the Atlas missile.

We have two such modified available at the present time.

Mr. CONSTANDY. Do you feel the solution to the problem with which you were faced that you wrote about in the December 7, 1959, letter was the one which should be presented to a particular item then in current inventory or any group of items, or do you feel that the answer was rather one of judgment as to what might be constructed and developed by the Air Force in the future?

Colonel HEDLUND. Well, I certainly agree that there is a very large element of judgment involved. We took two approaches, one, to take a look at the current hardware and the projected hardware as far as we could see, which sometimes does not go too far in the future, and secondly, try to recognize the need for some inherent flexibility, as we go into the unknown years ahead.

In doing this, we did not rely upon any particular piece of hardware and we did not try to concentrate on missiles or anything else, but looked across the board.

And as you look ahead into 1975 and beyond that time period, I believe, as Dr. York indicated, it is a judgment factor. We do not know what type of equipment the weapon systems that will be coming up with and during the life of this highway system will be.

We are going to have weapon systems that will be born and produced and phased out and we will still have the same highway system. It seems only rational that we have a little flexibility.

Mr. CONSTANDY. Is it important that we have a decision reached today, when the highway program is being built, to take into account this future need of what you are apt to have?

Colonel HEDLUND. I would think so.

Mr. CONSTANDY. Since you now have 16-foot items, this allowance for the future led you to determine that 17 feet would be a height that would be desirable for the future needs of the Air Force; is that correct?

Colonel HEDLUND. As we indicated in these pieces of correspondence, we felt that the current projected hardware pointed to at least 16 feet. To the extent that we could go beyond that to 17, we felt this would provide some additional flexibility.

Mr. CONSTANDY. Colonel, we have had some testimony about the operational use of the Atlas missile. I wonder if you could tell us in a little more detail and perhaps correct any erroneous impressions left in the record as to how the Atlas will be used operationally?

Colonel HEDLUND. Well, I have not followed your testimony word by word during the sessions of this subcommittee, but I can give you perhaps a little information on the Atlas missile.

It, of course, as Dr. York says, is a large piece of equipment. It is intended to be ready for firing from fixed installation and generally speaking once installed, will not be picked up in toto and moved from here to there for maintenance and that sort of thing.

Rather, the maintenance will be a component maintenance rather than total weapon. These weapons will be in groups of relatively small numbers, for operational reasons.

Mr. CONSTANDY. Does the current plan call for the situation of several, perhaps a dozen or so, operational sites throughout the country, and that this site will have an operational base, will have an airfield and that there will be hardened sites, I believe you call them, these launching sites which will be at varying distances from the operational base?

Colonel HEDLUND. This is correct; the general philosophy is that there will be a dispersed group of individual missile sites around a parent base, as it were, for maintenance and repair and that sort of thing and I believe in most cases, associated with an airfield, perhaps all. I just have not checked that out.

Mr. CONSTANDY. We have had some testimony relating to transportation of the Atlas missile with and without the vernier engines attached.

I believe we interviewed you on December 10, 1959, and we discussed that and correct me if I am wrong, but my impression was that it would be desirable to transport it from the factory to either the test site or an operational base with the vernier engines installed. Is that correct?

Colonel HEDLUND. Well, I don't want to get tied up in a technical problem here which I am not qualified to discuss.

Our general approach at the time, right now, is to transport the Atlases over the road without the vernier engine for quite obvious reasons.

The verniers then are attached at the central site, under our operational concept, and then moved to the final base to which they are assigned.

I am led to believe that there would be some advantage if we could transport the missile completely from source of origin to final destination with the vernier attached.

I am not qualified to speak as to how much of a problem this is.

Mr. CONSTANDY. We also had some discussion about the operational use of the Minuteman missile and we have had some testimony here today about that. I believe, at the time we spoke, you stated that the Air Force had considered the possibility of highway transportation of the Minuteman too, that it was felt it was not as desirable as rail transportation since the railroad train carrying the missile, its launcher, personnel, tracking and communications equipment, could move as an integrated movement whereas with highway transportation, the parts would move separately. Is that correct?

Colonel HEDLUND. Well, that is essentially correct. However, here, I think we should make clear that we are not talking about moving a missile from the factory to launching site, but rather in this context, we were talking about our mobile concept of utilizing the Minuteman missile.

Mr. CONSTANDY. In other words, as an operational weapon?

Colonel HEDLUND. As an operational weapon.

Mr. CONSTANDY. Was there some question as to the weights involved in the transportation, operationally, of the Minuteman?

Colonel HEDLUND. Well, as you know, I am sure, the Minuteman is a solid propellant missile. It therefore carries its propellant with it at all times which is not the case in either the Atlas or Titan. It also has a warhead on at all times, so it is a very heavy piece of equipment.

This poses a considerable problem with respect to over-the-highway movement. With respect to the mobile concept, it is visualized that a railway car will be entirely capable of handling a missile weightwise, lengthwise, and in every other aspect.

Mr. CONSTANDY. Thank you; that is all.

Mr. BLATNIK. Mr. May?

Mr. MAY. Colonel, you set forth the reasons for your needs of the greater clearance exceptionally well.

I have here something that was introduced in testimony earlier; that is, a letter dated April 5, 1957, from you to the Chief of Transportation and it is an answer to General Yount's original letter of January 15, 1957, when he asked that the 14-foot vertical clearance standard and the adequacy of that standard be reviewed. You replied on April 5, 1957.

That the commander of Air Research and Development Command has reviewed the geometric design standards of the National System of Interstate and Defense Highways and has agreed that the standards are adequate for the needs of the Air Force.

How did that letter come about in view of the fact that apparently the Air Force does need a higher vertical clearance standard?

Colonel HEDLUND. I can only answer that one by saying that I hope, as we go along, we get more capable and able to do our jobs.

In 1956 and 1957, as you know, we had gone along for some time in the developmental stages of the missile program but we were just getting into the operational and firing stages with our big intercontinental ballistic missile.

We did not feel at that time that the limitations were sufficient to be particularly restrictive. However, as we went along, we found that the number of exceptions which were necessary for outsized and big equipment tended to increase year by year. We then found that we were moving into the modern weapon area faster, perhaps as a result of the sputnik, than had been contemplated and I am not attempting to be on the defensive here, I am merely saying that we have reassessed the situation in 1958, and it started to look fairly clear that perhaps we had not taken the look at it in 1957 that we should have. We have continued to keep our finger on this and we feel that what we have stated in our most recent actions is the best considered judgment that we can come up with.

Mr. CONSTANDY. Mr. Chairman, I would like to have the letter that Colonel Hedlund wrote on December 7, 1959, for General Besson made exhibit 39.

Mr. BLATNIK. It will be inserted at the proper place following the reference to these letters. Without objection, so ordered.

Any questions?

Mr. BALDWIN. I have one question. Colonel, do I understand that the position that the Air Force took on the last decision, as to whether this should be 16 feet or 17 feet, is, that as far as the Air Force was

concerned, that you, the Air Force, your recommendation was 16 feet? Is that correct?

Colonel HEDLUND. I think, sir, it bears upon the relevant weight which you would put on current hardware which you had to move or the objective which you might want as you look into the future.

Now I say again, we considered this from both views and from the current hardware plus what it looked like, we could see 16 feet would do the job in the majority of circumstances. But again, as you looked ahead, and this is in the ethereal area perhaps, we certainly had no objection to something beyond 16 and therefore, went along very readily with 17 feet.

Mr. BALDWIN. I don't know that you have answered my question. I realize you say that you went along with a decision that was made elsewhere, a recommendation apparently by the Army, but if I understand you correctly, as far as your own Air Force computations, if you were making that decision, apparently your recommendation would have only justified 16 feet, if I understood you correctly?

Colonel HEDLUND. I believe that would be the case; yes, sir.

Mr. MUMMA. My impression was that they could live with 16 feet, that they could live with it.

Mr. BALDWIN. Thank you.

Mr. MUMMA. Is that correct, Colonel?

Colonel HEDLUND. Yes, sir.

Mr. MUMMA. Just to make the record clear, you stated that the 16 feet represented your present need and that 17 feet represented allowance for the future, is that correct?

Colonel HEDLUND. This is what I have been trying to maintain here, but when you really tie it down to something that you can see you are forced to look at current and foreseeable future hardware and from that point of view, 16 is the figure.

But again as a look beyond that, 17 would appear more appropriate and you could argue maybe 20, or some other figure.

Mr. BALDWIN. If I may follow that for a minute, you say if you look beyond that, if I understand correctly, you have no specific missile in mind when you are looking beyond that, the only thing that you actually had tangible, either produced or on the drawing boards, was something upon which you base this 16-foot decision but your statement about 17 feet was that would just allow another foot of clearance without having any specific missile or specific piece in mind. Is that about the situation?

Colonel HEDLUND. That is correct, sir.

Mr. CRAMER. Will the gentleman yield? It is only possible if not too great a cost?

Colonel HEDLUND. We did not feel we were in position to make a determination on the cost nor at that time did I have any information as to the relevant costs of 16 versus 17.

Mr. CRAMER. But you did make that observation?

Mr. BLATNIK. Any further questions, Mr. May?

Mr. MAY. No further questions.

Mr. BLATNIK. Thank you very much, Colonel Hedlund. We have one final matter that we would like to get on the record with Mr. Chacey. Mr. Chacey, would you please return to the stand?

STATEMENT OF D. K. CHACEY, ASSISTANT CHIEF OF TRANSPORTATION FOR TRANSPORTATION ENGINEERING, DEPARTMENT OF THE ARMY—Resumed

Mr. MAY. Mr. Chacey, back in November or December, you met with the Assistant Secretary of Defense, Mr. McGuire, and he asked you to obtain for him an estimate of the additional cost of increasing the vertical clearance to 16 feet and he asked you to prepare other information. Did you thereafter prepare what you call a fact sheet for the benefit of the Secretary?

Mr. CHACEY. I did, sir.

Mr. MAY. Do you have a copy in front of you? I have a copy here which I will read, Mr. Chacey. You follow me and see if I am accurate.

Mr. CHACEY. All right.

Mr. MAY. It is captioned fact sheet, Assistant Chief of Transportation, Mr. D. K. Chacey, dated December 7, 1959.

Subject: Vertical clearance standard for National System of Interstate and Defense Highways.

1. Purpose

To provide information as basis for response to letter from Secretary of Commerce requesting verification of Department of Defense position relative to increase in minimum vertical clearance standard for National System of Interstate and Defense Highways from 14 to 17 feet, and Department of Defense views on financing this change.

2. Facts

(*a*) *Policy.*—(1) Since 1922 the military have advised the Bureau of Public Roads of defense needs to be served by public highways.

(2) World War II plans to move large military items by rail frequently had to be disregarded in favor of highway movement.

(3) In 1944 Congress authorized the National System of Interstate Highways to serve among other needs those of the national defense.

(4) In 1948 the American Association of State Highway Officials wrote the Secretary of Defense and offered to incorporate defense needs into the highway programs to avoid in the future the World War II experience of having to move loads exceeding designed capacities of the highways. As a result of the AASHO request, the Secretary of Defense delegated to the Secretary of the Army, who in turn delegated to the Chief of Transportation, the authority to coordinate overall defense highway needs among designated services and OASD representatives, and to represent Department of Defense to AASHO and Bureau of Public Roads.

(5) Consistently since 1949 the Secretary of Defense personally or the DOD has advised Congress and the Bureau of Public Roads that the Interstate System is the principal system of connecting highways to serve the national defense.

(6) In 1956 Congress emphasized the defense purpose of the National System of Interstate Highways by redesignating it as the National System of Interstate and Defense Highways.

(7) The 41,000-mile National System of Interstate and Defense Highways built to last 50 to 75 years is a very limited net compared with the 800,000-mile Federal-aid system and the 3,400,000-mile system comprised of all highways in the United States.

(8) There were 1,015 Army, Navy, Air Force, and military transport—

what is MTMA?

Mr. CHACEY. Military Traffic Management Agency.

Mr. MAY (continuing):

movements certified important to national defense during the year 1958 with vertical dimensions of over 13½ feet.

And you point out 13½ and 14 feet, 482; 14 to 15, 337; 15 to 16, 165; and over 16, 31. Of the total, 940 were moved by commercial carriers. Trip lengths varied with 448 ranging between 100 and 500 miles and 188 running over 1,000 miles.

(9) Presently one-third of the States are providing vertical clearances on their portions of the National System of Interstate and Defense Highways of 16 feet or more and two-thirds are providing 15 feet or more.

(10) Such alternatives to raising structures as depressed roadways on medium and redesigned interchanges or ramps to permit movement around structures have been studied and found to be more costly and less desirable operationally.

(11) The National System of Interstate and Defense Highways structures over railroads provide a vertical clearance of 22 feet, but lower old structures and limited horizontal clearances prohibit rail movement of many outsized items.

(12) With few exceptions, military movements by air or rail are also moved 1 to 5 times by highway transport.

(13) On October 1, 1959, the Department of Defense, with firm justification for vertical clearances in excess of 14 feet recommended a minimum 17-foot clearance to insure flexibility in design and operation of weapons systems.

(14) Later in October 1959, the States recommended to the Secretary of Commerce that he adopt the minimum 17-foot clearance.

(15) In response to request of the Assistant Secretary of Defense, Supply and Logistics, on November 24, 1959, that the Department of the Air Force furnish current comments and recommendations with respect to the vertical clearance for the National System of Interstate and Defense Highways, the Chief of Staff of the Air Force made the following statements on December 7, 1959.

And therein you incorporated the information previously testified to by Colonel Hedlund.

Mr. CHACEY. That is correct.

Mr. MAY. In the following paragraph after that you say——

The House of Representatives' Special Highway Investigating Committee and the President's special committee under Maj. Gen. John J. Bragdon have indicated specific interest in the recommended 17-foot clearance.

Then you have a section having to do with the financing and—

The Secretary of Commerce has complete budgetary responsibility for financing the National System of Interstate and Defense Highways.

(2) The Department of Defense annually pays commercial highway carriers for freight alone over $200 million, part of which is paid into the highway trust fund as highway-user taxes. Very few movements are made by military-operated vehicles and these involve relatively short distances.

(3) The 17-foot recommendation would increase the estimated cost of $39 billion for the National System of Interstate and Defense Highways by $313 million for approximately 14,000 structures yet to be built, or an average cost of about $22,000 per structure.

(4) A vertical clearance of 16 feet would increase the cost cited above by $195 million for the approximately 14,000 structures, or an average of about $14,000 per structure.

Then you have a section under discussion—

a) Policy.—(1) The Department of Defense recommendation of October 1, 1959, derived directly from a long and continuing military interest in the public highway programs of the United States, during the course of which an earlier Secretary of Defense and President Eisenhower identified the National System of Interstate and Defense Highways as the principal system of connecting highways to serve the national defense.

(2) Considering that the life expectancy of the National System of Interstate and Defense Highways extends through the next half century, it is believed wise to provide a 17-foot clearance against future defense needs, particularly when we are already able to demonstrate a need for 16 feet, and when over

two-thirds of the States are already providing 15 feet or more based primarily on needs of the civil economy.

(3) Considering the limitations of other modes of transportation in the movement of outsized items, it is imperative that the inherent flexibility of highway transportation be fully exploited during national emergencies. This cannot be done unless the critically limiting 14-foot vertical clearance standard is increased. And it should be realized that highway transportation must be used in connection with almost every shipment, regardless of which mode is selected as the principal one.

(4) Economic pressures may further the trend among the States for higher vertical clearances on the National System of Interstate and Defense Highways. Department of Defense leadership is needed to attain uniformity among the States in this critical area.

(5) Considering today's firm requirements for a vertical clearance of 16 feet, any minimum standard less than this will impose restrictions on long-haul movement which will become progressively more serious when utilizing comparable standards. Ultimately these restrictions will seriously hamper military emergency movements.

(6) Record and working files relative to the 17-foot vertical clearance have been examined by representatives of the House committee investigating all aspects of the highway program, and the committee has asked to be kept apprised of all actions taken or contemplated in this matter.

The final section regards financing.

(1) The same design features that have military value also have value to the civil economy. Consequently, attempting to separate funding responsibility for such a defense need as the recommended 17-foot vertical highway clearance would be no less difficult than attempting to do the same thing with respect to the railroads' need for a minimum 22-foot vertical clearance, concerning which no similar suggestion is known to have been made.

(2) Highway movements of military cargo directly benefit the civil economy and the highway trust fund since, pursuant to national transportation policy, most such movements are made by commercial carriers paying highway-user taxes.

Mr. Chacey, did you furnish to the Assistant Secretary of Defense, Mr. McGuire, any other data other than that contained in this fact sheet?

Mr. CHACEY. Yes, sir, I prepared a chronology of the actions that had been taken with respect to the problem of vertical clearance, a copy of which was also made available to you.

Mr. MAY. That chronology is not unlike the steps that have been brought forth in the testimony before this committee?

Mr. CHACEY. No, sir.

Mr. MAY. Mr. Chairman, may we make this fact sheet exhibit 40?

Mr. BLATNIK. Without objection, so ordered.

(The document was marked "Exhibit 40" and will be found in subcommittee files.)

Mr. MAY. One more item, Mr. Chacey, the Office of Chief of Transportation, last October 1, 1959, recommended a vertical clearance standard be raised to 17 feet. What is the recommendation of the Chief of Transportation's Office today?

Mr. CHACEY. The recommendation of the Department of Defense today is 16 feet. Now the Chief of Transportation, and of course, he is to be one of your witnesses, insofar as I am concerned, we have made no other recommendations. We made the recommendation in October of 17 feet. Officially, that is the last official action taken by the Chief of Transportation on behalf of the Department of Defense, to my knowledge. In other words, we have written no further letters on this subject.

Mr. BLATNIK. Any questions?

Mr. Baldwin?

Mr. BALDWIN. I have a question, Mr. Chairman. Mr. Chacey, do I understand correctly that this memorandum showed that the additional cost to build structures to 17 feet would be $313 million?

Mr. CHACEY. Yes, sir, that is the figure that we were using at that time.

Mr. BALDWIN. And that the additional cost to build the structures to 16 feet would be $195 million?

Mr. CHACEY. Yes, sir.

Mr. BALDWIN. Now were these the structures remaining to be built on the Interstate System?

Mr. CHACEY. These were the structures remaining to be built on the Interstate System.

Mr. BALDWIN. And this would not involve any question of rebuilding structures that have already been built on the Interstate System to a lower standard?

Mr. CHACEY. This figure did not include those.

Mr. BALDWIN. Now, as I understand this memorandum, it stated that you had a firm requirement for 16 feet, that is I have just jotted down some wording right out of the memorandum in which there was a statement that you established a firm requirement for 16 feet?

Mr. CHACEY. Yes, sir, we accepted or felt that the movements that were being made today justified clearly a 16-foot vertical clearance requirement.

Mr. BALDWIN. So once again, is my understanding correct, when you then stated that you were recommending 17 feet, you were doing so simply to make allowance of an extra foot over what you had established as a firm requirement of 16 feet?

Mr. CHACEY. This question has been discussed a good many times, I believe, is not one in which you can come to a given point and cut it off. We are moving things with vertical clearance in excess of 16 feet today, but they get to the category of which there are so few that you do not consider there is an overriding justification to go back and change all these structures so that these few items can be moved. This was my feeling and it was the feeling of most of the people that we discussed this with, that when we arrived at 17 feet, there was considered a firm requirement for a 16-foot vertical clearance to cover our missiles and radars and supporting equipment of that kind we now foresee.

Mr. BALDWIN. My understanding in the same memorandum is that it was brought out that there were only 31 movements in that year period covered by the memorandum of items that required greater than 16 feet clearance. Is that right?

Mr. CHACEY. That is correct, and in connection with that, I would like to clarify one phrase that is in this paragraph. We said in there that there were 1,015 Army, Navy, Air Force movements certified important to national defense. I covered this earlier, but I want to make certain that there is a clear understanding in relation to this statement, we are not certain that all of these were certified. All of these movements were made, but I believe some movements were included in this list that were not certified essential to national defense.

They were movements that were accepted by the States and by carriers without the necessity for this certification.

Mr. BALDWIN. Isn't the issue here the difference between building the remaining structures to 16 feet, which would cost $195 million, and building the remaining structures to 17 feet, which would cost $313 million, or a difference of $118 million. The question basically is whether 31 movements in a year's time over 16 feet and projected movements in the future that might be in the same relatively small number, would merit the expenditure of another $118 million for the additional one-foot clearance. Isn't that about the issue here?

Mr. CHACEY. I think the thing that was concerning most of us was that here in a relatively short time we have had need to move many items in the 14-, 15-, up to 16-foot area. We have only been in the space age and the missile age a very few years and what the future holds, we do not know.

I don't think that this thing can be related mathematically to the 31 versus, for example, 148 the next year and so on and so forth, but the fact that due to the life of this system, and the fact that we could not foresee the complete requirements, there being no mathematical solution to this, that it resolved itself to a matter of judgment and it was the judgment at the time as of October 1, 1959, that the 17-foot was a practical resolution of this problem.

Mr. BALDWIN. On that point, Mr. Chacey, when you mentioned that you had seen over the last couple of years an increase in these larger sized clearances, I take it you were also here and listened to the testimony this morning of Dr. York, who pointed out that now the tendency, as they foresee it in the field of missiles, is back the other way, toward missiles that would be more mobile, smaller, in contrast to the size of the ATLAS. You heard that testimony this morning, did you not?

Mr. CHACEY. Yes, sir.

Mr. BALDWIN. So there is no clarity right now in the way of the foreseeable future as to whether the tendency will continue to be toward larger requirements or whether the tendency now will be along the lines suggested by Dr. York to somewhat smaller missiles?

Mr. CHACEY. I have never heard anyone that felt they were in a position to predict with any definiteness what 20 years from now will be the character of not only our missiles, but Dr. York also, I believe, emphasized the supplementary equipment and other vehicles which may become very important in years to come.

Mr. BALWIN. Thank you. That is all.

Mr. MAY. Mr. Chacey, so we won't overlook the fact that the missile program was considered way back in 1957, we must remember General Yount's letter, which was composed by whom?

Mr. CHACEY. I drafted the letter.

Mr. MAY. January 15, 1957, you said in there:

The primary purpose of this request is to insure the minimum vertical clearance of 14 feet for bridges and underpasses which might restrict the transporting of defense material, such as missiles, is brought to the attention of all concerned.

So that in January of 1957 you, Mr. Chacey, were concerned with the missile program and you were calling this to the attention of all

concerned so that they would weigh the adequacy of the 14-foot vertical clearance standard.

Mr. SCHERER. Was he concerned with a 14-foot clearance at that time; is that right?

Mr. CHACEY. That is right.

Mr. MAY. We probably should also point out that if there is $195 million difference in cost of going from 16 to 17, that money, of course, wouldn't all be spent in the same year. This would be spent over the next 10 or 12 years or more.

Mr. CHACEY. This would be spent over the entire program.

Mr. MAY. It wouldn't be too much money per year. When the matter was referred to——

Mr. SCHERER. Pardon me. I don't think we are worried, as I indicated by my comments yesterday and this morning, that this increase of $123 million is a lot of money. It is a comparatively small amount, however, compared to the total cost of this program and the benefits to be derived. I am worried, if we raise it to 17 foot, what it might do; that it might give impetus to the demands and the eventual satisfying of demands to increase the size of hauling facilities, both in width, height, and weight, and then we would be in for some terrific costs in increasing the bridge structure strength, pavement strength, width of highways. Whereas we now have an 8-foot limit on the width of trucks, we would have maybe a 10-foot limit. And then our new pavements would be as inadequate then as they are now to accommodate the 8-foot trucks.

That is the thing I am worried about; this $123 million doesn't bother me, but I can see if we don't stop someplace we are going to continue, as we have in the past, to have these constantly increasing demands which result not only in greater costs for vertical clearance but also increased costs for rights-of-way, pavement thicknesses, and bridges. I think that is the real issue we are facing.

Mr. CHACEY. That is a very important problem and that is one which AASHO Road Test and Highway Research Board study has to resolve, and the legislatures of the States and the U.S. Government must exercise some control. There will always be a desire to have something bigger and wider.

Mr. SCHERER. Then you get into another dispute between the various beneficiaries of the highway. Who is going to pay what portion of the costs to keep this program going?

Mr. MAY. Did you have these things in mind, Mr. Chacey, when the Department of Defense requested 17 feet last October?

Mr. CHACEY. What things in mind, sir?

Mr. MAY. These things that the Congressmen just mentioned might come about because of increase in vertical clearance?

Mr. CHACEY. I think it is evidenced in our letter. In our letter we pointed out that we are not seeking any change in the legislative limitations on vehicles, that we would handle our movements through arrangements through the Government with the designated State representatives on a special permit basis.

Mr. SCHERER. I don' think anybody who ships over highways today would admit, and maybe they would be telling the truth, that at this moment they are seeking any increase in the height or weight of vehicles. But it inevitably follows; that is, when you give them an

opportunity to increase the size and weight, eventually it is going to happen.

Mr. CHACEY. I think there will be some changes, but I hope they won't be credited to the fact that the Department of Defense asked for a higher vertical clearance, Mr. Scherer.

Mr. SCHERER. That is one of the things that is going to happen as a result of this hearing. We are going to decide whether the Department of Defense should pay part of this cost. You want the 17 feet and, at the same time, I can see that Defense, like the trucker, is going to try to avoid paying for any increased standards. That is normal and natural.

Mr. MAY. Mr. Chacey, when the matter was eventually referred to the Assistant Secretary of Defense, did you thereafter participate in the preparing of the two draft letters?

Mr. CHACEY. I did.

Mr. MAY. Did one of those draft letters contain justification for 16 feet?

Mr. CHACEY. One of those draft letters was designed to modify a Defense position from 17 to 16 feet.

Mr. MAY. What did the other draft letter do?

Mr. CHACEY. The other draft letter was prepared to support or justify the 17-foot recommendation.

Mr. MAY. Did you successively compose two letters, one justifying 16 feet and one justifying 17 feet?

Mr. CHACEY. We drafted two letters, I should say.

Mr. MAY. For whom?

Mr. CHACEY. For Secretary McGuire.

Mr. MAY. Were they submitted to the Secretary's Office?

Mr. CHACEY. This was handled through Dr. Germane's Office. I am sure they were.

Mr. SCHERER. I talk too much but it seems that we have a rather humorous situation. In the past, Members of Congress have said this Defense Department doesn't consider the dollar. It asks for twice as much as it needs. Now in the last year, we are trying to shove more money down their throat in the missile program and higher standards in the road program than they are asking.

Mr. MAY. These draft letters were prepared for Mr. McGuire's eventual signature and they were directed to the Secretary of Commerce; is that true?

Mr. CHACEY. The draft letters were actually prepared with the view of helping or assisting Mr. McGuire in his review as to what the alternatives were in this problem. He specifically was concerned about the 16 feet as an alternative to the 17-foot clearance and they were prepared simply as drafts of letters which, from my standpoint, was: Here, Mr. Secretary, is something that would be reasonable to say in your review if you want to justify the 17-foot vertical clearance, and here, Mr. Secretary, is an alternative if in your review, you find that the 16 feet is considered adequate, this letter would do.

Mr. SCHERER. I think you have as much trouble making up your mind as did Congress last year in deciding whether we would have a cent or a cent and a half tax increase or none at all.

Mr. CHACEY. I am sure it is obvious it wasn't an easy decision.

Mr. SCHERER. Neither was ours.

Mr. CRAMER. Isn't it true you had justification along with the letters for both decisions; that is, either decision?

Mr. CHACEY. It was factual data, facts submitted to support both.

Mr. CRAMER. That was actually based upon the letter that the colonel was discussing a few minutes ago, which is the basis of your memorandum in which he said in effect that we can only justify 16 feet, 16 feet is justified, based upon our present weapons, but anticipating the future, it would be nice to have an additional foot and decision on that is a matter of judgment depending on the cost.

Mr. BALDWIN. Will the gentleman yield?

Mr. BLATNIK. Any questions, Mr. Baldwin?

Mr. BALDWIN. Mr. Chacey, would you be able to tell us, you mentioned there were 31 movements over a period of a year's time of greater than 16 feet required clearance. Would you be able to tell us what portion of those movements involved missiles as compared to some other ordinary type of military equipment?

Mr. CHACEY. No, sir; I can't tell you that.

Mr. BALDWIN. Would you be prepared to tell us whether any of those over 16 feet involved the movement of missiles?

Mr. CHACEY. I have a note here, which was supposed to be illustrative of the oversized movements. One item is a rocket launcher——

Mr. BALDWIN. Are these movements that fell in the category of 31 above 16 feet?

Mr. CHACEY. This was 15 feet 9 inches.

Mr. BALDWIN. That wouldn't fall under this category?

Mr. CHACEY. No, sir. One was an aircraft control tower.

Mr. BALDWIN. What was that?

Mr. CHACEY. Sixteen feet.

Mr. BALDWIN. An aircraft control tower?

Mr. CHACEY. Yes, sir. One was a helicopter.

Mr. BALDWIN. That aircraft control tower, that would go to some airport and be set up as a control tower at that airport.

Mr. CHACEY. That is right, that is my understanding.

Mr. BALDWIN. That would have nothing to do with missile program; obviously.

Mr. CHACEY. Not as I would interpret it.

Mr. BALDWIN. Now what is the clearance for the helicopter?

Mr. CHACEY. Sixteen feet, no inches.

Mr. BALDWIN. Then if I understand correctly——

Mr. CHACEY. Excuse me, let me qualify this. These were the military-owned items. Under the commercial movements these were military traffic management movements or commercial type movements. Here is a radar antenna, 17 feet. A missile launcher, 17 feet. An electronics handling trailer, 16 feet. Those are the only items—I have only listed five items here. These were supposed to be just examples, and what actually we did here was, on the telephone, we called somebody that had sent in a report and said, "Give us some example of what some of these items were."

Mr. BALDWIN. I take it then of the 31 items that were in excess of 16 feet, based upon these 5 representative examples, that there were only a portion of them, probably less than half, that fell in the missile category and that these 5 are a representative cross section.

Mr. CHACEY. Of these five, three were in the 16 feet and over. In 1958 we had a total of 31 that were 16 feet or more and in calendar year 1959 we had 148 that were 16 feet or more.

Mr. BALDWIN. What I am driving at, is when you give an example of moving a tower that would go into an airport, it reminds me of going down the street and seeing a house being moved. There will always be cases where somebody, and the Air Force is no exception, where something will have to be moved from one place to another, that you may have an alternative as to whether to be able to move it in a whole piece like a tower for an airport, or whether you might have to dismantle it.

Mr. CHACEY. I am sure we have no misgiving in that area. We concluded a long time ago that we were going to have things that would have to be sectionalized particularly in the space age type of vehicle. They are simply going to have to be sectionalized. We cannot provide vertical clearance for movement of everything that every scientist and engineer can put on the drafting board and indicate a very desirable reason to have that item moved.

Mr. BALDWIN. Could I ask one further question? In this memorandum that said that there were 31 movements over 16 feet, what portion of those 31 fell in the limitation between 16 and 17 feet as compared beyond 17 feet?

Mr. CHACEY. I don't have that answer. When we got down to that small a percentage, and if you take a progression here, theoretically it runs out and we know now and we will forever know, that there will be items that we cannot move on public highways that people want to move.

Mr. BALDWIN. What I am driving at is this: Of those 31 movements above 16 feet, since you haven't given us any evidence as to how many were above 17 feet, we have no actual evidence before us as to what number of those 31 would fall in the category of 16 feet as compared with 17 feet and maybe there are only 5 that would be solved by increasing this cost by $118 million

Mr. CHACEY. I don't think there is any question but what a few of these would run over 17 feet. It would be my thought, and it is an assumption, because of the normal progression here, that when you get over 17 feet, you begin to get into pretty serious difficulty, telephone wires, traffic signal cables, and such as that. They use a 16- or 17-foot height for those, so we know from practical experience that you just don't move very much over public highway, unless you tear down a lot of things that are along the highway, to move items over 17 feet.

Mr. BALDWIN. Thank you.

Mr. SCHERER. Of course there are other reasons why military weapons of the future are going to have to be sectionalized, other than because of difficulties that may be encountered in transportation. The handling of them off highways is a big problem, isn't it?

Mr. CHACEY. There is no question.

Mr. SCHERER. There are other problems other than transportation that are going to require you to keep these weapons within size limits.

Mr. CHACEY. In all sincerity, I do believe one of the principal restrictions is transportation and that will apply for all methods of transportation. You just have to recognize the fact that we cannot

have an unlimited clearance on all modes of transportation. It just isn't economically feasible and it presents some difficulties to some of the designers, but we recognize you have that.

Mr. CRAMER. Those 31 items you mentioned, will you submit to the committee a breakdown of those that will be solved by a 16- to 17-foot increase?

Mr. CHACEY. I don't think we have it. It is 1958 data. The only way we could get it would be to go back out to the regional directors and ask them to fish out the bills of lading and identify it. They may not keep them more than a year. That is detailed bills of lading. They have a record of movements and tonnage.

Mr. CRAMER. You have no way of knowing whether going from 16 to 17 feet will solve 25 percent of the problem, 10 percent, 5 percent or what?

Mr. CHACEY. We took these items simply to show a trend of what is going on. These aren't all inclusive. If 31 of them fell within the 16 or 17, or only 5 of them did, it in itself does not have too much of a bearing on what we were trying to develop here. You are still dealing with a small percent and you are dwindling to practically nothing in relation to what you moved for the 13½ to 14 feet and 14 feet to 15 feet.

Mr. CRAMER. In effect what you are saying is even if the total of 31 fell within 16 to 17 feet, your judgment would be that it wouldn't justify the increase to 17 feet on past experience and basing it on knowledge as to what presently is in your inventory and what is anticipated to be in the future, that 16 feet is adequate.

Mr. CHACEY. Well, we didn't come to that conclusion actually at that time.

Mr. MAY. You came to the conclusion you needed 17 feet.

Mr. CHACEY. We came to the conclusion that 17 feet was a practical solution to this problem. We are not quarreling with anybody that has a different opinion because it is a matter of judgment.

Mr. MAY. You grant some leeway for future development.

Mr. CHACEY. That was the thinking that existed at the time that this vertical dimension was suggested.

Mr. BLATNIK. Thank you very much, Mr. Chacey. The hearings for today are concluded. The meeting is adjourned. The meeting resumes tomorrow morning at 10 o'clock.

(Thereupon, at 4:45 p.m., the committee was adjourned, to reconvene at 10 a.m., Thursday, February 18, 1960.)

DEFENSE HIGHWAY NEEDS

THURSDAY, FEBRUARY 18, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to adjournment, at 10 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommittee) presiding.

Present: Representatives Blatnik, Baldwin, Clark, Cramer, Gray, Jones, Mumma, Robison, Scherer, Schwengel, and Smith.

Also present: Walter R. May, chief counsel; John P. Constandy, associate counsel; George H. Martin, administrative assistant; and Kathryn M. Keeney, clerk of subcommittee.

Mr. BLATNIK. The House Public Works Subcommittee on the Federal Aid Highway Program will resume its public hearings. Our first witness this morning is General Pachler. General, will you take the witness stand, and any staff that you may have?

STATEMENT OF MAJ. GEN. F. T. PACHLER, DIRECTOR OF OPERATIONS AND ACTING ASSISTANT DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS, DEPARTMENT OF THE ARMY

Mr. BLATNIK. Mr. May, do you have a prepared statement or do you wish to proceed with the interrogation?

Mr. MAY. General, will you give your full name and rank?

General PACHLER. I am Francis T. Pachler, Major General, U.S. Army.

Mr. MAY. What position do you now hold in the Army?

General PACHLER. I am Director of Operations within the Office of the Deputy Chief of Staff, Military Operations, of the U.S. Army.

Mr. MAY. Would you explain to the subcommittee the function and responsibilities of your position?

General PACHLER. My superior is responsible to the Chief of Staff of the Army for the preparation and execution of approved plans.

I am responsible to him for the surveillance of the readiness of the U.S. Army to execute approved plans.

Mr. MAY. Now we have been discussing here for a number of days the Interstate System of Defense Highways. Do the problems arising from that system fall within your jurisdiction?

General PACHLER. Inasmuch as my responsibility is surveillance of readiness to execute approved plans, the Army requirements for

vertical clearance over the national highways have been referred to my office generally for evaluation.

Mr. MAY. The subcommittee might take note of the fact that Army Regulations 55-80 recognize responsibility of the Chief of Staff's Office, Operations, section 4(c).

It states:

The Assistant Chief of Staff, G-3 (Deputy Chief of Staff for Operations), Department of the Army, will, with the advice and recommendation of the Chief of Transportation, Department of the Army, determine the relative strategic importance of highways.

General, on March 18, 1958, the Office of Chief of Transportation asked the various military agencies to reevaluate the adequacy of the 14-foot vertical clearance standard.

You replied to that letter on July 24, 1958.

General, do you have a copy of your letter there?

General PACHLER. I do.

Mr. MAY. Would you read it for the subcommittee, please?

Mr. SCHERER. What is the date of that letter?

Mr. MAY. July 24, 1958.

General PACHLER (reading):

Subject: Highway clearance standards
To: The Chief of Transportation
From: The Deputy Chief of Staff for Operations

1. References:

(*a*) Comment No. 1, Chief of Transportation, subject as above, dated March 18, 1958.

(*b*) Comment No. 3, Chief of Research and Development, subject as above, dated May 5, 1958.

2. In view of the cost of the NSIDH and its projected useful life of 50 years, it is believed militarily unsound to consider only presently foreseen requirements in evaluating the adequacy of the 14-foot vertical clearance standard. Technology is advancing so rapidly that it is virtually impossible to predict what our military requirements will be more than 6 to 8 years from now. The space age is already demanding larger payloads and more powerful rocket motors which will mean larger physical dimensions than our missiles have today. Future technical breakthroughs could mean even larger sizes of military hardware. This hardware should not be restricted in its rapid movement over the Nation's highways in the future because of an overly conservative vertical clearance standard established today. The Defense Department position should include standards which provide a reasonable leeway for future requirements.

3. It is understood that an increased vertical clearance will not necessarily mean a large increase in construction costs provided the decision is made now.

4. Information has been received from Office Chief of Transportation that subsequent to the date on comment 1, Department of Defense issued instruction sheet No. 3224.1, dated March 25, 1958, subject, "DOD Engineering for Transportability Program" which directed the services to designate an operating agency to monitor current and developmental material and equipment to insure conformance with weight and dimension criteria of the various transportation system. This instruction sheet was forwarded through ODCSLOG to TC for implementation. Action on the instruction sheet is being handled by Mr. Whilldin, X56963. Mr. Whilldin was not aware of the enclosure 1.

5. Your attention is invited to paragraph 3 of reference 1(b), wherein the Office of the Chief of Research and Development is willing to participate in a detailed study of this matter.

6. It is recommended that in light of the information noted in paragraphs 2-5 supra that as a point of department for the action referred to in paragraph 4, above, at least a 20-foot vertical clearance standard be considered as a Department of Defense position in this matter.

Mr. MAY. General, that seems to very clearly set forth the needs and desires of the Deputy Chief of Staff for Operations. I might

point out that you did mention that you understood that the increased vertical clearance would not necessarily mean a large increase in construction costs provided a decision is made now. And that was on July 24, 1958.

General, could you explain to us what you meant by "as a point of departure" when you spoke of 20 feet?

General PACHLER. Yes, sir, I believe I can. As always, when a conference or a discussion on a subject is going to be undertaken or studied, it is only normal and reasonable to ask your representative to consider a specific starting point.

This is merely what we meant by that with no idea that the nonconcurrence or an argument should develop, but that the feasibility and desirability of such a figure should be explored.

Mr. MAY. General, do you subscribe today to the basic reasoning set forth in your letter of July 24, 1958?

General PACHLER. So far as the reasoning that I quote in paragraph 2; yes, sir.

Mr. MAY. Now you mention 20 feet as being a point of departure. We have had testimony that November 8, 1958, the Army did arrive at an official recommendation, official position of 17 feet.

Do you recall how the 17 feet came about when the 20 feet was initally suggested as a point of departure?

General PACHLER. Yes, sir. It is my recollection that the Chief of Transportation notified us that, I believe one of the other services had asked for 16 feet, had indicated that one of the ordnance commands had specified a requirement for 17 feet and that this looked logical to us to adopt the 17 foot standard.

Mr. MAY. General——

Mr. SCHERER. Pardon me just a minute, counsel. Did any of the Defense Department agencies, either Army, Air Force, or Navy, request anything greater than 17 feet after the studies had been made?

General PACHLER. Sir, this is outside of my knowledge and my responsibility. However, I do not know that any of them has asked for over 17 feet.

Mr. MAY. General, there has been quite a bit of discussion here at the hearings concerning the importance of greater vertical clearance to allow for the transportation of missiles. Ignoring missiles for the moment, would you explain your functions, what they might be when an emergency arose?

General PACHLER. Yes, sir; I believe I can. Basically, I am responsible in any type of an emergency to see that our forces are moved to the position that is desired or called for in the plan.

Basically, as everybody is well aware, we must be able to move to ports of embarkation rapidly, we either must be able to give reinforcement of our forces overseas or, dependent on contingency operations such as the Lebanon operation which was affected, we must be able to move our troops to those faraway places just as rapidly as we can.

We cannot fly everything and therefore we must move quickly to our ports of embarkation in order to move up the heavy equipment and the heavy items that are necessary for the sustained operation that the forces committed might be faced with.

Now, over and above this, of course, we have the normal peacetime movement to training areas, where we must rehearse properly, we

must get to the areas, we must at time utilize the highways as part of our training.

Basically, while it is a little out of my line, the logistical people must move equipment back and forth on the highways, but essentially, my responsibility is to assemble the necessary troops and equipment as rapidly as possible to either reinforce the troops committed overseas or to reinforce those that have been initially committed by air.

The air movements will be necessarily light and it is just mandatory that speed play a great part in our backup of those forces.

Mr. MAY. In the event of an emergency, then, it would be essential that you move speedily such pieces of equipment as tank recovery vehicles and your larger guns and items such as that?

General PACHLER. We need all that type of equipment. We need tanks, we need heavy guns, we need bulldozers, and we need all the type of fighting equipment that normally goes with a unit.

Mr. MAY. What would happen if there would be some delay in the movement of such equipment, if you were forced to use circuitous routes and delays of many hours or days?

What would be the result?

General PACHLER. Well, every day is important in a reinforcement idea. My point of illustration is that we cannot fly tanks; we cannot fly the heavy tanks. If we have forces committed, say the thing in Lebanon did blow to where we had some active engagements, our troops would have been on the ground without the tanks and therefore it is just a question of judgment. You don't want to be 1 hour without a tank when you are in active combat and actually every hour counts toward shipping them out of a port where we can get them to the troops.

Mr. MAY. Your troops on the ground would require very drastically the use of heavy artillery?

General PACHLER. Oh, yes, sir; no question.

Mr. MAY. There has been some talk——

Mr. SCHERER. Pardon me just a minute, Counsel. You said you can't fly these tanks. Then if they were shipped from the United States they would have to go by water.

General PACHLER. Sir, in the particular case of Lebanon, I did not mean to mislead you, in the particular case of Lebanon, we moved them from Europe.

Mr. SCHERER. Well, if they went from the United States, that is what we are concerned with here, they would go by water?

Mr. MAY. You have what you call a Strac division out on the west coast; is that true?

General PACHLER. We have more than one Strac division. We have a Strac, which is an Army corps, of three divisions, three groupings of forces. We have two on the east coast, the two airborne divisions, and we have one on the west coast.

Mr. MAY. Might it be essential some day to move the Strac division perhaps to the east coast or perhaps to the west coast?

General PACHLER. Yes, sir; it has been thought of. Naturally, we would like to take off from as close as we could, but the fact remains that we have an infantry division on the west coast and may have to move it to the east coast for shipment.

Mr. MAY. There had been some thought that perhaps you might be unable to do that by the use of selected roads and instead of dividing the entire Interstate System, perhaps build a couple of east-west highways and a couple of north-south highways. Would that solve the problem?

General PACHLER. The type of movement that I am talking about, where there is no attack on the United States, I suppose we could take care of a large part where there is no attack on the United States. However, our units must necessarily be dispersed. When I talk of a Strac division, I am only talking of a basic force; the basic force of a division is only, let's say, 13,000 to 14,000 people.

The accompanying equipment and units that really use the heavy equipment, will bring this up to 25,000 and 30,000 people, and they are spread in many different places. The division may be at Fort Lewis, Wash.; the supporting battalions may be down in California, so that actually, you have a widespread movement to points and, therefore, right now, I do not visualize how any minor channeling of this would take care of the requirement which I describe.

Mr. MAY. Also, we must face the fact that, perhaps due to enemy action, areas not considered vital now might then be considered vital; is that true?

General PACHLER. Yes, sir; you are moving into a condition of where the United States has been attacked. If the United States has been attacked, then nobody knows what highway is going to be left and it is impossible to prejudge which highway is to be used. You are going to have to use what remains, what facilities we have.

Mr. MAY. Therefore, there is a need for the entire defense system of highways to be altered so that it might make more easy the transportation of the equipment you mention?

General PACHLER. Sir, as I see it, and my analysis of it a number of years ago, the Chief of Transportation has been able to solve our movement problem.

Mr. SCHERER. I did not hear that.

General PACHLER. In the years gone by, the Chief of Transportation has been able, by special measures and by special means, to solve our highway transportation problem. With the complexity of the new system which is so overreaching through the whole United States, it appears to me that he is going to be given an impossible job unless he has complete flexibility to move and move rapidly. He will not fulfill our requirements.

Mr. SCHERER. I do not understand that last answer, General. Will you repeat that?

General PACHLER. I will try my best, sir. In the years gone by, the Chief of Transportation has always been able to satisfy our operational requirements for movement either by rail or over the highways. Sometimes he had to avoid overpasses and things of this nature.

Now, I think in my analysis of what is going on now, and from what I have been told, the complexity of the highway system is getting such that we are denying the Chief of Transportation the flexibility he needs, unless he has the proper clearances.

Mr. SCHERER. That last part of your statement then is what I do not understand. Is it because of the complexity of the new system that he is going to be denied free movability?

General PACHLER. When I say "complexity," sir, I am thinking in terms of the magnitude.

Mr. SCHERER. Magnitude of your new movements or magnitude of the system?

General PACHLER. The magnitude of the highway system, sir, the interlocking of the highway system with all roads that are in the United States today.

Mr. SCHERER. I would think, leaving out the question of clearances, I would think that the new system would facilitate movements. I thought that is what we were trying to do.

General PACHLER. Naturally, I am only referring to clearances.

Mr. SCHERER. You are only referring to clearances?

Mr. MAY. General, you are talking about many thousands of structures to be built on the Interstate System, and the Interstate System road going over other systems of roads, primary and secondary roads, creating a checkerboard effect throughout this country?

General PACHLER. That is what I am talking about.

Mr. FALLON. General, is the movement of missiles your chief concern?

General PACHLER. No, sir; the movement of missiles is not my chief concern. I would say that basically, in a straightforward answer, the movement of the ordinary conventional weapons is the chief concern that I have, sir.

It is—over and above weapons and equipment—it is some of our engineering equipment, as well as our artillery and tanks and things of that nature.

Mr. FALLON. What about movement and deployment of your missiles and missile systems?

General PACHLER. The deployment of the missiles and missile systems, sir——

Mr. FALLON. I understand that the Department of the Army missiles, that they now have in operation, are not stationary or fixed and are subject to immediate mobility in their deployment and so I just wondered if that was giving you much concern?

General PACHLER. Any missile that we have in operation today is mobile and can be taken care of on a planned system. It looks as though some requirements will develop which will require a little bit higher ceiling than we now have on the clearances.

Mr. MAY. General, excuse me, are you talking about Army missiles or missiles throughout the military?

General PACHLER. I was trying to refer to the Army missile.

Mr. FALLON. I asked for Army missile.

General PACHLER. I am talking about Army missile, I am not referring to anything else.

Mr. MUMMA. Mr. Chairman?

Mr. BLATNIK. Mr. Mumma.

Mr. MUMMA. I think I understood from previous testimony that the Army has set standards for their heights of different weapons and that was 12½ feet; their overall height would be 12½ feet. Is that a correct understanding that I have?

General PACHLER. Sir, I have no knowledge of that standard.

Mr. MUMMA. Well, Mr. Chacey, did he make that statement?

Mr. MAY. He did say that, although he pointed out that they did attempt to design these items with a low height, they are not always successful and the items must be——

Mr. MUMMA. The overall plan was to keep it down to 12½ feet. If we are going to make it 16 or looking along that line, they have a little margin of safety there yet.

Mr. MAY. The item being 12½ feet, when it is placed on the transport which has a bed——

Mr. MUMMA. I do not thoroughly agree with your position on that. If it came to a case of dire emergency, maybe you had 100 bridges and only one too low, they could take the tank off that vehicle in a very short time, ride it through and put in on again. I know that from practical experience.

Mr. MAY. General, would you prefer to do that, when say, a tank recovery vehicle on its transport reached a low overpass, remove the tank, drive it under the structure, and then load it back on the transporter?

Mr. MUMMA. Wait a minute, let me put in, if it only occurred once in every 50 bridges, if it was every bridge it would be a different proposition.

Mr. MAY. We have some figures, Congressman, that I do not believe we brought ou through Mr. Chacey, we might later this morning. It concerns Pennsylvania, and the Bureau of Public Roads made a study of Pennsylvania. They took a couple of primary routes——

Mr. MUMMA. Interstate routes.

Mr. MAY. Primary routes, and then they took the Pennsylvania Turnpike.

Mr. MUMMA. Well, now, everybody knows that is not big enough. There are plans to build two additional tunnels on there now and they will certainly be made big enough for any foreseeable future. You were talking the other day about the fact you could not get a tank into New York City. Now to my mind that was a foolish question you raised. Everybody knows that thing was designed 30, 40 years ago.

Mr. FALLON. Gentlemen, I believe the General had not completed his observation on the missile program.

General PACHLER. Just about, sir. I would like to say that the chief concern on missiles to us is the logic of, while we may not specifically have a missile today that operationally will require an excessive clearance this entered into the desirability of, a growth factor, if this system is going to last for 75 years.

Mr. FALLON. What would you do with the TITAN missile? That is a rather sensitive missile. How are you going to deploy it?

General PACHLER. The TITAN is Air Force, and I had better stay on the Army missiles.

Mr. FALLON. It is still part of defense.

General PACHLER. Yes, sir, it is.

Mr. FALLON. There is no rule that would prohibit you from saying anything about the Air Force?

General PACHLER. No, sir; I just feel I am a little better qualified on Army missiles.

Mr. SCHERER. That is one reason we need a little more integration.

Mr. MAY. General, to substantiate what you have been saying about the frequency of the structures as the Interstate System is to be built, I think this study made by the Bureau of Public Roads is very indicative of the frequent structures on many of these superhighways.

In Pennsylvania, they studied U.S. 19, which runs 194 miles to the State——

Mr. MUMMA. Where is that located? That is not one of the main routes. The main routes of Pennsylvania are routes 30, 22, and the turnpike.

Mr. MAY. Yes, sir; I was getting to that. And in the primary route, route 19, running 194 miles through the State, there were only 11 structures passing over the highway. And on U.S. 11, in Pennsylvania, which runs some 265 miles, there were 17 structures. But on the Pennsylvania Turnpike, at a distance of between Pittsburgh and the State line, a distance of 200 or 250 miles, there were 186 structures, which points out what you have been saying, General, that on some of these primary and secondary roads the structures are infrequent, but on some of your superhighways like the Interstate System, they will be very, very much more frequent.

General, there has been some talk that many of these items can be disassembled in order to be transported. Do you have some thoughts on that one?

General PACHLER. Yes, sir; we have reached a stage in the reaction time necessary to fulfill our commitments overseas that any time lost is really basically unsound.

Now, we must be able to get some place in absolutely the fastest time practicable as a rule and as a standard and, therefore, to plan on anything less than the speediest of movement is militarily incorrect.

Mr. MAY. So that you must consider then the reassembling of an item, if it has to be disassembled for the trip?

General PACHLER. I was presuming this takes time to do this, it is just impossible. Actually, if you go to your condition of war where the United States has been attacked, I would say it might be almost impossible to move things and assemble them.

There you are going to be short of technicians, short of everything else; in other words, it must be operable as quickly as it can possibly be made so.

Mr. MAY. You would prefer to receive these items in what might be called combat readiness?

General PACHLER. Yes, sir.

Mr. MAY. General, there has been some talk about the possibility of another conflict and that being atomic war. What would happen to your problems if that came about?

General PACHLER. When I talk about an attack on the United States, this is basically what I was referring to, the destruction of atomic war would, one, require decentralization in the military effort throughout the country. What we could move to ports would have to be decentralized. We could not rely on any predesignated system of roads. We would have to be able to utilize what was still in being and by the same token, you could not count on the rails as fully as you do now.

You could not count on freighting because you would not have the time, the people nor be able to react properly.

Mr. SCHERER. Under those conditions, clearances would be your least difficulty, wouldn't they?

General PACHLER. No, sir. I should think they would be just as important, Mr. Congressman.

Mr. SCHERER. If we have atomic war it will last what? One day, two days? Isn't that what you tell us?

General PACHLER. No, sir. An atomic war is going to last for many many months, sir.

Mr. SCHERER. Well——

General PACHLER. Yes, sir, I think that is accepted now. You might have your atomic exchange in a couple of days, but you are going to have subsequent phase operations that will last for a long time.

Mr. SCHERER. It is hard for us laymen to try to evaluate all of the things we read and are told. May I ask, what clearance do you recommend, that is, for the military or the Army in the next 5, 10, 15 years? What clearance do you recommend?

General PACHLER. I would recommend a 17-foot clearance, but I recognize some of the other forces in play and therefore am willing to fall back to 16 feet, sir.

Mr. SCHERER. You think 17 feet will do the job?

General PACHLER. I think 17 feet would be very prudent.

Mr. SCHERER. Now and for the foreseeable future?

General PACHLER. Yes, sir.

Mr. MAY. General, when we discussed the matter with you sometime ago, you indicated that you thought perhaps even more concern should be given to the more orthodox form of warfare?

General PACHLER. This is true, I talked about movement to ports, and conventional wars and our commitments overseas and that is why to a certain extent I say that our problem is highlighted more in the rapid movement of artillery and tanks and engineering equipment probably, than missiles, and it just looks to me like the war that you are referring to is the one that requires the most instantaneous reaction. In other words, 24 hours might make the difference between whether you have a big conflagration or whether you are able to settle it down with a few good, fine troops well equipped in place.

Mr. SCHERER. I am trying to determine in my own mind the seriousness of the situation. I realize that if we have an emergency, we are going to move a lot of men, a lot of material, a lot of equipment. What percentage of the movement is going to be delayed by the movement of these oversized items? A great mass of material you will be able to move, will you not?

General PACHLER. Yes; a great percentage.

Mr. SCHERER. In fact, it is a very small percentage of the movement required that would be delayed, would it not?

General PACHLER. Oh, no. I would have to——

Mr. SCHERER. The total movement——

General PACHLER. By small, you give the connotation of unimportant. The point is, sir, that it is conclusive certain types of items won't get moved that are necessary as part of the whole.

Mr. SCHERER. So far there are no items the Army hasn't been able to move when you wanted to move them. There may have been a delay, but you have been able to move them.

General PACHLER. That is what I am talking about, we can move anything with a delay; yes, sir.

Mr. SCHERER. That is what I was trying to say, the number of oversized items that would have to be moved in an emergency are relatively small. I am not talking about importance, but these oversize items are a relatively small number compared to your total overall movement of men and material and equipment, are they not?

General PACHLER. On a straight numerical basis, I would have to say "yes."

Mr. SCHWENGEL. General, I have another question I would like to direct to you which touches on another phase. I assume, because this is a defense system, you are watching the development all over the United States and that the vertical height problem, the overpass, isn't your only concern, is that right?

General PACHLER. Yes, sir; I would have to say "yes," except that personally, I don't know that map there as well as I would like to know it, but certainly the Army as a whole is watching it; yes, sir.

Mr. SCHWENGEL. That being the case, do you have any ideas about what is happening in a different part of the United States where they are trying to build a whole system at one time, a little bit here and a little bit there and with the idea of getting it all complete at the same time. Do you have any ideas about completing certain roads ahead of other roads, certain areas where, for instance, where the traffic is greatest? Do you have any ideas about a priority that we ought to recognize in this to strengthen defense? A defense highway is no good until the trunkline is complete, isn't that right?

General PACHLER. This, I must admit, I am inadequate to answer this question. I really don't have the facilities.

Mr. SCHWENGEL. You don't know——

General PACHLER. I mean I have no personal knowledge, sir.

Mr. SCHWENGEL. What area do you concern yourself with in this connection?

General PACHLER. In this connection I have only been concerned with this clearance problem right now.

Mr. SCHWENGEL. As it relates to the total problem?

General PACHLER. Yes.

Mr. SCHERER. I think what the Congressman from Iowa meant was that, if we solve this clearance problem, are there going to be any other limitations in this system that we should now consider insofar as strength of bridges, width of bridges, widths of right-of-ways? Is the Army looking at perhaps some of the deficiencies in these standards?

General PACHLER. Sir, it is my understanding that the whole coordination of the Department of Defense with the Department of Commerce on this subject takes into consideration that type of thing, sir. All I am saying is that I personally have not——

Mr. SCHERER. As of now, knowing what the present standards are you see no problem in the foreseeable future? I mean you will not be back here next year saying perhaps the bridges aren't strong enough or that the grades are too steep or that perhaps the right-of-ways, particularly over bridges, are not wide enough?

General PACHLER. Sir——

Mr. SCHERER. Is that in the picture at this time?

General PACHLER. I wonder if I could not defer to the next witness, sir, who does have the technical knowledge of this kind of thing.

Mr. SCHERER. The only reason I am asking this question is because we are now listening to testimony from a number of witnesses who say that they have been worried about height for 3, 4, 5 years back. Now while we are considering this clearance problem I want to know if anybody in the Defense Department or the Bureau of Public Roads, is thinking about any other standards that are too small or inadequate to meet future needs, so that next year we are not confronted with a similar problem with reference to other geometric standards.

General PACHLER. I so agree, but I just have no personal knowledge. I am sure, though, that our transportation people can explain if there are any difficulties.

Mr. SCHERER. I assure you we were not told about these clearance problems when we were considering the 1956 act or while we were having hearings on the 1958 act or even last year.

Mr. BLATNIK. General, your major responsibility, if not perhaps your sole responsibility, is to have combat readiness units ready for the move the instant you are ordered into action?

General PACHLER. That is my responsibility, yes.

Mr. BLATNIK. This is your job?

General PACHLER. Yes.

Mr. BLATNIK. Construction in the Department of the Army and Department of Defense is such that you have other divisions in your agency responsible for the transportability, they know what the requirements of your staff units are and you are more or less assured that, when you are ordered to move, you have the means by which you can move your units wherever the destination may be. You would not be directly involved with the mechanics and adequacy, that is the responsibility of other agencies; is that correct?

General PACHLER. This is correct.

Mr. SCHERER. I didn't want to suggest by any questions that I asked that there was any criticism at all of the general. My question was directed to all of the witnesses that are here, from Defense Department, Bureau of Public Roads, or any other group.

Mr. MAY. General, you have set forth most clearly the needs of the Army operations. We might mention that on May 7, 1957, the Chief of Transportation was advised that the Deputy Chief of Staff, Logistics and Military Operations, advised that the services found a 14-foot standard adequate. Do you have any explanation of how that might have come about in May of 1957?

General PACHLER. No, I have no real reason. I have no personal knowledge of why that came about. I think it came about in that a survey was made and most of the agencies said that they thought a 14-foot clearance would satisfy them.

Mr. SCHERER. Were you consulted at that time?

General PACHLER. I was not in my present position until July of 1957.

Mr. SCHERER. Do you know whether, from the records that you reviewed, do you know whether the person who was in your position at that time was consulted as to——

General PACHLER. Oh, yes.

Mr. SCHERER. Whether a 14-foot clearance was adequate?

General PACHLER. I don't mean to hedge on this, sir; actually the action at that time was in an adjacent directorate to mine. It was really an organizational trend, so for me to say to you that my predecessor had personal knowledge of this 14-foot, I cannot find that from the record. But I am sure that he was consulted, sir.

Mr. SCHERER. Of course, we all recognize that conditions changed after October 1957.

General PACHLER. Yes, sir.

Mr. MAY. Did conditions change, General, or didn't this same problem exist in 1957?

Mr. SCHERER. Wait. Before sputnik or after sputnik?

Mr. MAY. October of 1957.

Mr. FALLON. Was that the time the first missile became operative, the Jupiter—is that what you are referring to—that the Army was developing?

General PACHLER. No, sir.

Mr. FALLON. Is that the significance of the time of this year?

Mr. SCHERER. No, the question of counsel, as I remember it, was whether the conditions changed in 1957. Was that your question, Counsel?

Mr. MAY. Yes, I wanted to bring out the point, through the general, that his need, his operations need for the movement of this equipment other than missiles existed in 1957 and in 1956 and even prior to that time. You still had the need to move this vital oversized equipment, as you have related here today. Is that true, General.

General PACHLER. Sir, the physical change, I don't think was as great as the mental change. There came a greater realization in that period of time that we needed higher clearances and it was due to several factors. It was due to some breakthrough in the missile field, it was due to some of these emergencies becoming a little more apparent to us. It was due to the—I would say, I go back to the same thing I talked to the Congressman about—the magnitude and complexity and the interlocking of the whole system.

A review would indicate to us that we were restricting our Chief of Transportation too much in what we were requiring him to do in these movements.

Mr. MAY. Thank you. General, later on a restudy of this problem was conducted by Secretary McGuire. You again wrote a letter on December 15, 1959, to General Besson, Chief of Transportation. Do you have a copy of that available?

General PACHLER. Yes, sir; I do.

Mr. MAY. Would you read that letter for the subcommittee, General?

General PACHLER. All right, sir. This is to Chief of Transportation from the Deputy Chief of Staff for Operations.

EXHIBIT 41

1. Reference is made to DF, comment 6, Deputy Chief of Staff, Operations, to Chief of Transportation, this subject, dated November 8, 1958.

2. By reference DF, DCSOPS proposed to the Chief of Transportation that a 17-foot vertical clearance standard be established as the Department of Defense recommendation for highway grade separation structures in the National System of Interstate and Defense Highways. This was a reconciled position from an originally recommended 20-foot standard.

3. This office holds to the view that a 17-foot minimum clearance standard for the National System of Interstate and Defense Highways would be desirable in order to provide a reasonable leeway for future requirements and to insure unrestricted movement of military hardware over the NSIDH in event of national emergency.

4. The 17-foot standard provides a 1-foot safety or growth factor over and above the presently known requirements of the services. In view of the overall costs of the National System of Interstate and Defense Highways and its projected useful life of 50 to 75 years, all things being equal, it appears inappropriate to consider only presently foreseen requirements in establishing standards for its design. However, this 1-foot growth factor could be sacrificed if necessary for economy reasons without impairing movement of equipment primarily in the hands of the services.

Mr. MAY. Thank you, General. It seems very clear as of December 15, 1959, that the position of the Department of the Army was still a recommendation for 17-foot clearance standard.

May we make that letter exhibit 41, Mr. Chairman?

Mr. BLATNIK. Without objection, so ordered.

Any questions on my right?

[No response.]

Mr. BLATNIK. Any questions? General, thank you very much for a very good point and for very helpful testimony. Our next witness is General Besson. General, would you please state your full name and rank and position?

STATEMENT OF MAJ. GEN. FRANK S. BESSON, JR., CHIEF OF TRANSPORTATION, DEPARTMENT OF THE ARMY

General BESSON. Frank S. Besson, Jr., major general, Chief of Transportation, Department of the Army.

Mr. MAY. General, how long have you been Chief of Transportation?

General BESSON. Since the 17th of March 1958.

Mr. MAY. It is our understanding that you replaced Maj. Gen. Paul F. Yount, although there was a short period in early 1958 wherein Major General Browning was Acting Chief of Transportation. Is that true?

General BESSON. That is correct.

Mr. MAY. We have also placed in the record the fact that the Chief of Transportation is the official representative of the Department of Defense and is charged with maintaining liaison with the Bureau of Public Roads, American Association of State Highway Officials, and other civilian organizations concerned with highways and is charged with taking the necessary action leading to integrating the foreseen highway need of the Defense Department into the highway programs of the United States.

General, you have that responsibility and you are charged with carrying it out, acting for the Department of Defense, so therefore, it

is not necessary for you, in order to carry out these responsibilities, to get the approval of the Department of Defense in relation to these matters. Is that true?

General BESSON. I have authority to act for the Department of Defense to the extent that my judgment would indicate that I should and could without reference to the Department of Defense. Obviously, in matters of major importance, I would coordinate my views not only with the various services, but also with the Department of Defense.

Mr. MAY. General Browning, who preceded you as Chief of Transportation, requested the various agencies of the military to review the adequacy of the 14-foot vertical clearance standard in March 1958; that was just prior to your arrival on the scene; is that true?

General BESSON. Yes, sir.

Mr. MAY. At what point did you become personally aware of the vertical clearance problem?

General BESSON. It is not clear to me in my recollection just when I became specifically aware of the problem. I recognized my position as a coordinator for the Department of Defense. I would suspect that from time to time, I must have been advised of this problem. I certainly recognized that we had a growing problem in the question of transportability within the services and particularly in my responsibility in the Department of the Army.

I, early in the summer of 1958, effected the plan for reorganization of my office, which would give greater attention and greater responsibility to Mr. Chacey and I put all of these responsibilities under him.

With respect to this specific problem, I am sure that I knew that we were working on it and staffing it, but the first time that it came to my real attention was when Mr. Chacey came to me in December of 1958 and said, "General Besson, I need your help."

This is the normal procedure in my office that I keep advised of progress and when my subordinates meet a stumbling block they feel they need help on, they come to me.

Mr. MAY. General, do you believe that the agencies that had been asked to review the problem were the appropriate agencies within the military?

General BESSON. To my knowledge; yes.

Mr. MAY. Do you feel that the replies were made by competent and qualified people expressing their honest judgment as to the foreseen requirements of their agency?

General BESSON. I have no doubt about that whatsoever, but I want to clarify that to the extent that these people, in expressing to me their opinions, were not expressing their personal opinions but they expressed the opinions of the agencies that they represented.

Mr. MAY. Very good. General, in January 1959, Mr. Chacey prepared a letter for your signature to the Bureau of Public Roads recommending a change in the vertical clearance standard to 17 feet. Were you aware of the existence of that draft letter in January of 1959?

General BESSON. This was not a letter prepared for my signature. This was a letter prepared as a basis for discussion with the Bureau of Public Roads. I was aware of that letter. I approved it for dis-

cussion with the Bureau of Public Roads with the request that I have an opportunity to discuss it with Mr. Tallamy on the 15th of January 1959.

Mr. MAY. At that time, it appears that an official position had been reached by the Department of Defense and that was 17 feet. Is that correct?

General BESSON. No; that was not an official position of the Department of Defense. This represented the views of the three departments. At that time it had not been finally staffed and coordinated and I make this distinction. There is no question but what there was a solidifying of an opinion within the three military departments that this 17 feet appeared reasonable.

In discharging my responsibility for coordination, however, I would not have signed that letter at that time without previously exploring with the Bureau of Public Roads the impact of this letter upon them.

Mr. MAY. If it had been agreed by the responsible people of the military that the need for a new vertical clearance existed and that 17 feet seemed to be a reasonable figure, why was it then necessary to handle this matter informally with the Bureau of Public Roads? Why not an official request at that time?

General BESSON. I do not believe that we had sufficiently explored all of the implications of such a letter and I would say that it is my recollection that the agencies that concurred in this particular draft letter concurred in it as a basis for discussion with the Bureau of Public Roads and not as the basis for Department of Defense position.

Mr. MAY. That seems to to be a problem for the subcommittee. You realize that structures were being built almost daily on the Interstate System, it appeared that many of the structures would be inadequate. Having reached a position in January of 1959, the next significant event seems to be the meeting between you and Mr. Tallamy which took place in May, a period of some 5 months later. Is that a proper procedure?

General BESSON. I think it was 4½ months later. It was actually 4 months from the time that we actually dispatched the letter and I think the letter was actually handed to the Bureau of Public Roads.

In retrospect, 4 months is too long, there is no question about it. At the same time, I feel that it was essential for me to discuss with the Bureau of Public Roads the implications of this letter and that I could not, as the representative of the Department of Defense, have embarked on a recommendation without getting the best technical evaluation of the course of action that I would be representing.

Mr. MAY. Realizing that in January you desired an early meeting with Mr. Tallamy to discuss the matter, why was a meeting not held until May 29, 1959?

General BESSON. I believe that your record has shown that this subject was discussed at various times in the Bureau of Public Roads, and that about the middle of April, we reemphasized the desirability of my meeting with Mr. Tallamy to discuss this draft.

Mr. MAY. Why did it take from mid-April until May 29 to hold a meeting?

Mr. SCHERER. I think the General has answered that question. He said that during the interim there were discussions at lower levels

and I think the previous testimony indicated that there were such discussions——

Mr. ROBISON. Will the gentleman yield?

Mr. SCHERER (continuing). Which took place between April and May.

General BESSON. Mr. May asked me why it took from the 15th of April until the 29th of May.

Mr. MAY. Yes, sir.

General BESSON. I would suspect this was due to the difficulty of arranging a concurrent time suitable to both Mr. Tallamy and to me.

I have checked back on my records, for example, and I find out during that time, I was absent from Washington on 10 different trips for various purposes, which is prima facie evidence that it would be difficult to find a time convenient to the two of us.

Mr. SCHWENGEL. General, isn't it true also at that time that Mr. Tallamy was kind of busy with other problems?

General BESSON. Yes, sir, I am certain this was a question of meshing our schedules together to find a time when we could meet.

Mr. SCHWENGEL. He had a problem in this committee and another committee of the House to get some agreement about finding money to carry on the program of building the highway and keeping it on schedule.

General BESSON. I believe it is true and I came over and sat in the anteroom in one of the meetings at that time but I was not called.

Mr. SCHERER. I remember Mr. Tallamy was then before the Ways and Means Committee for a week at a time.

Mr. MAY. General, we have had some testimony that the meeting, when it was finally held with Mr. Tallamy, lasted for some 30 or 45 minutes. Do you recall that?

General BESSON. I do.

Mr. MAY. Do you believe that was sufficient time to explore this problem and its ramifications?

General BESSON. There was no question in my mind but that the time was adequate to have a meeting of minds between me and Mr. Tallamy.

I am aware, although I was not at that time, of the reservations that were made by Mr. Siegle and I would like to address myself to those reservations, if I may.

Mr. MAY. Go ahead.

General BESSON. In the first place, I might cover what I felt was the sense of our meeting and this was one of the reasons that I insisted on coordinating my position with the Bureau of Public Roads and with Mr. Tallamy.

There is no sense in making a recommendation which is not carried through and I wanted to find out whether the case which I had presented was strong enough in his opinion and fundamentally it was my recommendation that ultimately it had to be reviewed by the Bureau of Public Roads, by Mr. Tallamy, and finally approved by the Secretary of Commerce.

I wanted to find out whether my arguments were strong enough to support the position which I had taken. In Mr. Tallamy's view, as a result of our meeting, they were not, and he felt that we needed more concrete evidence to present to assure that the recommendations that we made were carried through.

Now, with respect to the specific reservations by Mr. Siegle. First, he questioned my statement that weight was not a factor. To make clear what this means, the load carrying capabilities of the Interstate System are adequate to meet military requirements as we foresee them.

The load-carrying characteristics on the primary system are not in all cases adequate to meet our requirement. Mr. Siegle's proposition was that we should move our outsize loads on other systems than the Interstate System. To me, this was a position which I could not accept and felt no necessity to discuss.

In my opinion, it would be ridiculous to label a system as a "defense highway system" and then propose that our major movements would not be consummated over that highway. That is the first point that Mr. Siegle raised.

His second two points were related. They had to do with the question of the existing structures and how I could recommend that we would build only the new structures to this increased standard. To put this in proper perspective, I would like to quote a few round figures which have been developed before this committee.

In 1956, there were incorporated into the Interstate Highway System certain roads which have approximately 6,000 structures, which would be affected by an increase in clearance.

At that time, looking at the other figures which we have, some 2,000 structures which are affected in the interval of time, and 14,000 existing structures, we are talking about a gross of 22,000 structures that would be affected by this clearance problem.

Recognize that 6,000 of these, in varying dimensions from 14 feet on up, but a minimum of 14 feet, were already in existence. This meant that taking those structures, because they are not all bridges, taking those structures, if we adopted in 1956 a new standard, 27 percent of the structures would have been below the new standard.

Over the period of time up until we made our recommendation, or up until today, this percentage of 27 percent has grown to 36 percent. If today we adopted a 17-foot standard of a 16-foot standard, something on the order of 30 percent of the structures would not meet the new standards when the system was authorized in 1956.

The point I am trying to make here, this is not a go-no go 100 percent right or wrong proposition. We were faced with a 27-percent backlog, if you will.

Now, I would not for the moment try to indicate that we should not have brought those old structures into the system. By and large these 6,000 structures on the roads that were incorporated into the Interstate System represented the best roads in the country, the newest roads, the highest type roads, and I would not consider at all that we should not go out and build up the rest of the system before we went back and tried to do something to the old system which happened to be the best that we had.

What I am saying is that I isolated out this question of what had been done in the past, because I felt, first, they existed, and we could not do anything about it; second, that we should not do anything about it until we had approached the problem of the new system and what we were going to do in the future and that we should then take up this question of the individual old structures on a case-by-case basis.

So these are the points which Mr. Siegle raised which he thought that I should have explored further. But so far as I am concerned, there was no disagreement between me and Mr. Tallamy. There was disagreement between Mr. Siegle, I believe, and Mr. Chacey, at the working level perhaps as to how this thing should be carried out. There was no question in my mind.

Mr. SCHERER. But those were normal disagreements between Mr. Siegle and Mr. Chacey that arose over a discussion of the complicated issue that existed.

General BESSON. Absolutely, Mr. Scherer. Discussions for——

Mr. SCHERER. You find no fault with Mr. Siegle's position except that you may have disagreed with him and you were trying to resolve these disagreements.

General BESSON. I frankly believe Mr. Siegle and Mr. Chacey have done a wonderful public service in what they have done over the past year for this system, and I find no fault with them or the opinions they hold, although from time to time I may disagree with them.

Mr. SCHERER. Because you looked at it from your point of view as far as defense was concerned, and they were looking at it from their point of view, and you tried to resolve it as a result of a series of conferences and discussions.

General BESSON. That is correct.

Mr. SCHERER. And you clearly and ably pinpointed the complex problem that existed, in view of the fact that as you say you had 6,000 structures that were on this system, many of them built as far back as the thirties.

General BESSON. I agree with you, sir. I have certainly given this the most serious attention and I would say in retrospect, I regret the length of time it has taken us to reach a position; but in this connection I would like to say it is always very difficult to break with the past. It is always very difficult to establish new standards, and when you do, no matter when you do it, the question is always raised, Why didn't you do it sooner.

What we were faced with here were standards that had been in existence for 35 years. This is according to your own records. These standards had been in existence for 35 years. They had been recommended in 1926 as adequate by the American Association of State Highway Officials. They had been confirmed by a review in the Department of Defense as adequate to military needs in October of 1957.

I assure you, in order to change from this very honest and intelligent appraisal in the past, it is a difficult job, and I recognized how difficult it was going to be, and I was consequently doing my utmost to build a very sound and solid case that would stand up under the intense kind of scrutiny which I assure you Mr. Tallamy gives it.

Mr. MAY. Will you state again the purpose of your meeting with Mr. Tallamy?

General BESSON. The major purpose of my meeting with Mr. Tallamy was to find out the implications of my recommendation of 17 feet to the Bureau of Public Roads, to the Federal Highway Administrator, to the Secretary of Commerce, and to ascertain if he felt, considering the climate in which we were making this recommendation, whether my arguments were sufficient to carry through; whether

I could convince him my arguments were adequate to support the recommendations which I was preparing to make on behalf of the Secretary of Defense.

Mr. MAY. Do you feel that a delay of 4 months in holding such a meeting was an unreasonable delay?

Mr. SCHERER. Mr. Chairman, I am going to object to counsel's question. The general has explained two or three times to us the reason for the delay, and I don't think he should be asking him again and again.

Mr. CLARK. He can express his opinion, I am sure.

General BESSON. Let me say on this question of delay, when you look at the question of delay as a total, it becomes a very serious one. I recognize that and I wish it didn't exist. When you break this delay up into its various components you will find that each of these components of delay took a certain amount of time, and each of those for one reason or another—and you could explore and find out that some portion of this delay was justified, and other portions were not justified. I think as we now stand today, that there was more delay than there should have been, and for that I accept my share of the responsibility. Beyond that I cannot go further.

Mr. MAY. General, evidently Mr. Tallamy did not think your case was sufficiently strong at the May meeting.

General BESSON. That is correct.

Mr. MAY. What were you able to develop thereafter to give you a greater justification for your decision?

General BESSON. I was well aware of what I would call the relatively normal problems in the services of moving outsize loads—our problems with tanks and with construction equipment, and that type of thing.

The one area I felt was really significant in the future was probably the missile area, so I went back and wrote personally to General Medaris and to General Schriever, who I know are the most knowledgeable people in this area, to get their personal views. I had their staff views before and perhaps I should have had their personal views before this, but I thought my case coordinated through the Departments was strong enough, and I felt I could strengthen my case by going to these individuals, which I did.

Mr. SCHERER. You didn't resent Bert Tallamy asking you for greater or additional justification in view of the problems he had in order for him to come to his decision?

General BESSON. I welcomed it, because my one endeavor was to make a recommendation which would go through without question and without reservation on anybody's part.

Mr. SCHERER. Did you think he was in error in suggesting you get further documentation for the position you took?

General BESSON. I did not.

Mr. JONES. What was the recommendation submitted to you by General Medaris with reference to this problem?

General BESSON. General Medaris' reply indicated that from the Army's standpoint, with the Army's limitation on what it had as its role in the missile business, that he did not consider that a 14-foot standard was a bar to effectual Army development in the missile field.

Mr. BLATNIK. At that time, General, the Army was already relieved of making some of the larger missiles.

Mr. JONES. Not at that time.

General BESSON. I am not sure of the exact timing of this thing. General Medaris' reply was the 2d of July 1958.

Mr. MAY. 1959.

Mr. BLATNIK. 1959.

General BESSON. I am sorry, 1959.

Mr. JONES. That was prior to the announcement of the President of the proposed reorganization of the missile program as it related to the ABMA at Huntsville.

General BESSON. I am not sure, but it can readily be established and we will insert it in the record if you so desire.

Mr. JONES. In that connection, did the Department of the Army accept the recommendations of General Medaris as far as access roads to ABMA and Redstone?

General BESSON. This question of access roads is one which is handled separately and distinctly on a case-by-case basis, and it is not really related to this problem directly of the clearances on the Interstate System.

Mr. JONES. I understand that it is not, but I believe General Medaris asked for an access road for the mobility of these missiles, and it was accepted and withdrawn immediately after the President's announcement. Why was there that change?

General BESSON. May I ask Mr. Chacey?

Mr. JONES. You can defer that question.

General BESSON. Because, frankly, I am not specifically aware of this case, Mr. Jones.

Mr. JONES. It is foreign to this discussion anyhow.

General BESSON. Fine.

Mr. MAY. General, what did General Schriever reply to your letter?

General BESSON. Shall I read it, Mr. May?

Mr. MAY. Yes, if you please.

General BESSON. It reads as follows:

DEAR GENERAL BESSON: 1. Your letter of June 17, dealing with the problem of clearance restrictions on future defense highway systems, has been thoroughly reviewed by my staff and I fully concur with increasing the 14-foot limitation to 17 feet.

2. Although the trend on ballistic missile weapon systems appears to be toward smaller physical dimensions, there are certain present requirements which will need a 17-foot clearance. For example, the F–1 rocket engine, when loaded on a flatbed trailer, will easily exceed the 14-foot limitation.

3. The impact of development of propulsion systems in the 1-, 5-, 10-million pound range cannot be evaluated at this time. Present state-of-the-art does not clearly indicate whether such propulsion systems will take the form of larger individual units or clusters of smaller units.

4. It appears that since it is virtually impossible to accurately visualize overall clearance requirements during the next 50-year period, a 17-foot clearance might benefit the Nation, especially in planning new underpass construction. Although forecasting is extremely difficult in this dynamic area, our staff is available for consultation with your Mr. Chacey with regard to the possible clearance problem. Basic missile planning is accomplished at Ballistic Missile Division, Inglewood, Calif. I would recommend that Mr. Chacey contact this headquarters to arrange for his trip to the west coast if it is your desire to obtain further detail.

Mr. MAY. On May 29 Mr. Tallamy was not convinced that your case was strong enough for presentation, and you now received a letter from General Schriever concurring in the 17-foot recommendation.

Was anything else accomplished to add to the justification of your position?

General BESSON. Nothing more than the coordination and discussion on the final draft of the paper which went forward on the first of October.

Mr. MAY. General Schriever replied on August 1, 1959. When did you make your official recommendation?

General BESSON. October 1, 1959.

Mr. MAY. Why was there that delay?

General BESSON. I don't really believe that in this particular instance you can seriously criticize this amount of delay, because there are a lot of signatures that had to be obtained on this paper, and the paper had to be rewritten and it had to be staffed through. Two months may be long. I don't know how much you would say might be par for the course.

I must say I also had to have an opportunity to evaluate what I received from General Medaris and General Schriever, which were conflicting statements, and I had to decide whether to go through with my plan for 17 feet; because I think you will find, or I think there is evidence here, that I had not substantially increased my arguments, except that I had the signature of General Schriever on a piece of paper that he said he thought 17 feet was right; but I was not able to do what I had hoped to do, to be able to tie myself more specifically to known projects on the drawing boards which would require additional clearances.

Mr. MAY. With respect to your October 1 letter, you did obtain the concurrence of certain people on September 30 and on October 1. Do you consider that those persons were the most familiar with the problem in their respective offices?

General BESSON. They were the designated representatives of the agencies authorized to speak for the departments. There is a normal procedure in obtaining concurrences. When an individual signs for his department he is supposed to have effected all of the necessary clearances, so I have no question but what these persons represented the official positions of their agencies.

Mr. MAY. What reliance did you place in the fact that these persons did concur in the letter?

General BESSON. I placed full reliance on it.

Mr. MAY. So at the time you directed your October 1 letter to Mr. Tallamy, it was your honest belief that there did exist a military need for a vertical clearance of 17 feet?

General BESSON. That there was a justification from the military standpoint for increasing the standard to 17 feet, yes.

Mr. MAY. Are you disappointed at the current vertical clearance standard of 16 feet?

General BESSON. This question of what the clearances should be in the future involves a very large element of judgment. Now, my recommendation was based on the best estimation which I could get, and I know you are addressing yourself to the question of Mr. McGuire's action in stating that we could get along with 16 feet. Mr. McGuire made further explorations which I am sure you will develop with him.

He talked to many of the people I have talked to. He talked to some people whom I personally had not talked to, and talked to their staffs. Mr. McGuire asked me what I felt would be the impact and what would be my personal reaction and showed me a letter. As I remember it—there were many discussions in this area and he said it was his judgment that he felt while the 17 feet was desirable, 16 feet was adequate to meet our presently foreseen requirements. I told him I considered there was a large element of judgment in this thing; that I could not contest his position to make this judgment, nor was I in a position to contest his judgment.

Mr. MAY. You have testified, General, that the proper people in the various areas were contacted and that they were the people to speak for the agencies. Is there anybody in the military who recommended 16 feet?

General BESSON. Initially the Air Force recommended 16 feet, but the final recommendations from the three Departments to me were for 17 feet. I would say that the letters subsequent to my October 1 letter, to some degree weakened the positions of the Department of Air Force and the Department of Army; that the letters that they wrote after my October 1 letter were not quite as strong as the letters I had prior to July 1.

Mr. MAY. As I recall it, the Air Force answered that they would recommend 17 feet, and if the vertical clearance was set at 16 feet the Air Force would be forced to accept the transportability risk. And General Pachler just testified that his views are still to recommend 17 feet.

General BESSON. That is correct, but I still must say that the letters are—the two letters from the Department of the Air Force and the Department of the Army—are somewhat weaker than the letters which I previously had, in my opinion, which may be a matter of judgment.

Mr. MAY. General, do you believe that the vertical clearance problem was properly handled by your office?

General BESSON. I would say that anyone in retrospect ought to be able to do a better job than what he did when he was faced with the problems as he went along. I can assure you that this problem was handled in conjunction with my other responsibilities to the best of my ability to handle them at the time. Now, in retrospect, if I had to do these things over, I could undoubtedly go back through my schedules and find things I would do differently.

Mr. MAY. General, could you suggest perhaps a safer and more expeditious procedure for handling similar problems as they might arise in the future?

General BESSON. The difficulty I—there are things which might have been done. We might have called a symposium of all the people and locked them up in the room until they came out with an agreed position. That is one thing that might have been done.

Mr. MAY. Is it possible to do that, General?

General BESSON. Anything is possible, and I think it could have been done, if somebody had in mind at a particular time that this thing was in a position where we should have done it. And there again I will say maybe I should have done this.

Mr. MAY. If it had been approached perhaps from the Joint Chiefs of Staff level down, would that have expedited the matter?

General BESSON. I would not try to pass this up to the Joint Chiefs of Staff at this time. It was my responsibility to coordinate this position, and I don't say I did not have the resources to do it in some other way from the way I did, and perhaps I could have found a better way to do it.

Mr. MAY. In fairness to you, General, and for the benefit of the subcommittee, would you relate some of your other responsibilities?

General BESSON. Well, as Chief of Transportation of the Army I am basically responsible to move persons and things for the Army.

Mr. MAY. That means on a worldwide basis?

General BESSON. It means moving people in the United States; moving them overseas. But I also have technical responsibility to supervise the transportation activities and give advice to the Chief of Staff on whether his transportation operations that are worldwide are progressing satisfactorily.

I actually also have certain direct responsibilities in our oversea areas for the operation of ports. For example, in Greenland and in Labrador and other places, I have the ports directly under my command.

The general scope of my responsibility might be measured by saying I am responsible for directly spending about $600 million a year of the taxpayers' money.

Mr. SCHWENGEL. I would like to make a statement and then ask a question here, Mr. Chairman.

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. First I would like to say to the gentleman and the committee that I think you have been a very splendid and forthright and honest witness here, and have been very helpful and very cooperative and very frank in your statement, saying that maybe something have been done better. I think this is certainly true in all our lives, and as a committee we can probably say this too.

On this delay we are talking about, the committee cannot absolve itself from the responsibility of last year, I think, so we must share in this delay. It is very obvious at this time.

I would like to ask you in connection with your other duties now, in addition to those things that you mentioned, you also, as Chief of Transportation, I am sure, are interested in other phases of this Interstate highway problem. Is that true?

General BESSON. Yes, sir.

Mr. SCHWENGEL. Do you share any concern with some of the rest of us that we are not making progress as rapidly as we could in getting connecting links and getting the most important highways built across the country, and bearing in mind something I am sure you realize, that this total system is going to be no good until we get the trunklines built at least, and it is not going to be real effective until the whole system is built. Is that true?

General BESSON. There is no question but what this thing will have its greatest benefit when it is completely constructed. I know there has been some discussion between our staffs—my staff and the Bureau of Public Roads—on the desirability of perhaps emphasizing certain selected routes. I think that to date the military has not taken an official position with respect to this matter, but we feel that the priorities generally to be applied to this system, which is separated out as

the highest priority unit, and which to my understanding by your congressional action you indicated should be brought along substantially equally throughout the United States—we feel that the administration of this is properly under the Commerce Department and the Bureau of Public Roads.

There is no question but what we should properly—if we find it apparent that we should do so—designate certain roads which might have a higher priority than others.

Mr. SCHWENGEL. Are you studying this problem now?

General BESSON. I would say that we are. I am checking with Mr. Chacey here, who handles these things, and he says, yes, we have. But I can assure you I will go back and find out a little more about it.

Mr. SCHWENGEL. By comparison with this problem we have under immediate discussion, are some of these other problems greater than this vertical clearance question that we are dealing with at the present time?

General BESSON. I must address myself probably to a question, in response to you and also one raised by Mr. Scherer, as to whether we have any other outstanding problems, because this is a question that General Pachler did not understand. We have been having a little discussion on the radii of the interchanges, which is something we are trying to work out with the Bureau of Public Roads.

Some of our longer missile units are giving us trouble in negotiating the exits from the Interstate System by virtue of the radii which are currently allowed under the standards. I feel, speaking frankly, and addressing myself to you, sir, that this question of clearance is an important one, because these structures as they are built will be there, and the other major attributes of this system from the military standpoint appear to be generally adequate. But in this one particular area it is important that we resolve this question of clearance.

Mr. SCHWENGEL. But actually, this is not the only problem you have to wrestle with. The point I am trying to make is, while this was a major interest of yours for some time and it continues to be, I am sure there were other problems you had to consider at the same time in connection with this total construction and building program.

General BESSON. There is no question about that, sir. We have continuous problems relating to this Interstate System. I talked with a Congressman the other day about a specific problem in his State. These things are coming up continually and also we have our problem of access roads, which is not directly related, but has to do with the highway system, which is a very important and continuing responsibility.

Mr. SCHWENGEL. On these other problems, do you feel you have a proper liaison and the ear of the Bureau of Public Roads?

General BESSON. I feel that we have now, and the record will indicate that we have had a most commendable relationship with the Bureau of Public Roads over a long period of time.

Mr. SCHWENGEL. You have no reason to believe that you do not have a sympathetic ear and sympathetic understanding of your problems?

General BESSON. No reason at all. There are differences of opinion, but they are attacked sympathetically and understandingly, and I

could not ask for anything better than the relationship we have with the Bureau of Public Roads.

Mr. SCHWENGEL. Thank you.

Mr. BLATNIK. General, may I ask you this question: Here is what disturbs me deeply. We have the best of liaison and your staff work is excellent in contacts between Mr. Chacey and the various Defense agencies in coordinating the thinking on the working level. There is no problem about getting the recommendations of different agencies. You compile statistics and come up with a real firm judgment early in 1959, after the matter had been worked on for at least two, if not more years, on a working level. You have constant liaison with the Bureau of Public Roads. I understand it is a complex problem, but if this is the normal procedure in which the decision is arrived at in the Department of Defense, in one Department, involving about a third of a billion dollar proposition in this instance, am I safe or am I fair in coming to the conclusion that perhaps other decisions are arrived at that way in the Department of Defense—the problems of where to deploy forces, and what missiles are to be used, and where and how?

General BESSON. Mr. Chairman, I would not say in any way that the way in which this thing has been handled should be set up as an example for all operations in the Department of Defense. I will say that in 1957 the three Departments in looking at their problems with respect to these clearances decided that 14 feet was still adequate, and that was based on the experiences of people where there had been problems, but where no one, to my knowledge, had ever built a military boat in a military basement that could not be moved. So far as I know, the military requirements over the years have been met, and they have been met on time.

There are two major factors which contributed to a change in the military position which was expressed in 1957. Those two major factors were, first, a growing awareness, and this just did not develop in everybody's mind overnight, but there was a growing awareness that our problems with clearances would be aggravated by building more and more modern limited-access highways. And this was not something which came up overnight, but it was a growing awareness of this thing.

There was a second facet of this thing which became an equally not—despite sputnik—equally not completely recognized thing—it was in evidence before sputnik but grew after sputnik—that was the point that we were approaching an era where it was not the oversea areas in which we were completely limited to deploying our military equipment, but we were coming to have a requirement to deploy our offensive and defensive weapons in the United States.

The philosophy in the Army, and I am sure in the other services too, has always been that by and large with the transportation system we have in the United States, anything we can move overseas we can move in the United States. And with all due respect to General Pachler, it is not his ability to deploy his weapons in the United States that is the sole factor, but it is how he is going to deploy them when he gets in the oversea areas.

By and large, in the past our clearances overseas have been the limiting factor. It has not been the clearances in the United States.

There is some trend overseas, with the autobahns—and even on the German autobahn, which was built in the thirties, the clearances are almost up to 15 feet—but we changed our philosophy from the idea that we were conditioned by our oversea deployments rather than those in the United States.

All I can say, Mr. Chairman, is it just takes time to depart from the standards of the past. It takes time to develop new concepts which permit you to see, or which lead you to see that despite the fact that I have been able to do this in the past, I can no longer do it in the future.

Mr. BLATNIK. You knew in January of 1959 that, if at all possible in your power, the weight that the recommendation of the Department of Defense would carry in stating its needs for a higher clearance should be stated as soon as possible. You knew in January 1959, that certainly the clearance should be greater than the established clearance of 14 feet at that time. It might have gone to 18 feet, or 15 feet, or somewhere in the range of a yard more. Wouldn't it have been possible to have made that a little more clear to the Bureau of Public Roads, so that they could have perhaps considered the advisability of having a tentative hold order issued to the States to give them some advance notice, "We are certain it will be above 14 feet. Just where we don't know. Hold the construction."

After 2 years of discussion and just leading up to the climax in which you and Mr. Tallamy were to get together and arrive at a determination, and beginning the 1st of April of 1959 until your letter or determination was finally made official on October 1, 1959—a space of about 4 months with 2,300 new structures built over the Interstate System—it compounds and complicates your problem; does it not?

General BESSON. I did not follow your figures there, Mr. Chairman.

Mr. BLATNIK. You are on the threshold of arriving at a final determination that informally recommended 17 feet. You are getting the reaction of the Bureau of Public Roads on the 17-foot figure to see how it would fit in with whatever limitations you may confront them with. Couldn't at that time the Department of Defense have made it clear to the Bureau of Public Roads that 14 feet was not enough clearance, and you would have to go beyond that? How far beyond could you say we are now in the process of resolving. At that point could not the Bureau of Public Roads have issued some sort of temporary and tentative cease-work order on the States to hold up on the overpasses?

General BESSON. I will agree something different could have been done in January 1959. Yes, sir.

Mr. BLATNIK. As I stated, for a period from about April 1, 1959, right when you were on the threshold of finalizing this matter, until October 6, 1959, there were 2,300 new structures, every one of them an impediment.

Mr. SCHERER. Since when?

General BESSON. This figure was since 1956; wasn't it?

Mr. BLATNIK. No. I am just talking about this last stretch, where we are giving you the benefit of the doubt. It is a serious problem that required 2 years of discussion during 1957 and 1958. We are now moving into early 1959. You have already reached a determination that 17 feet is necessary in order to meet defense requirements.

On the verge of that determination, from that time on, I cannot understand or accept an explanation for the delay. If the reasons for the delay were justifiable, why was not some tentative decision made, so that the States could have been informed to hold back on the overpasses?

Mr. SCHERER. Weren't those structures authorized rather than built? We do not have 2,000 structures built since 1959.

Mr. BLATNIK. These were built.

Mr. SCHERER. Since 1959, on the Interstate System?

Mr. BLATNIK. Yes.

Mr. MAY. May I clarify that? Yes.

Mr. SCHERER. 2,000?

Mr. MAY. Mr. Erickson drew up an estimate on March 31, 1959, and he estimated that in order to build the future structures at 17 feet and to go back and revamp the older structures, it would cost a total of $875 million.

On October 6, 1959, 6 months later, Mr. Erickson drew up another estimate and at that time he said, and I quote:

> Since our March 31 estimate, 2,300 more bridges have been completed on the Interstate System.

Now, we must concede that of those 2,300 structures that were built, not all of them would be affected in this problem. However, in his October 6 estimate we have some very clear figures.

Mr. Erickson showed that in order to build the new bridges it would cost now $313 million, whereas his March estimate said in order to build the new bridges it would cost $332 million.

So that figure decreased $19 million.

However, when it comes to the cost of revising and rebuilding the bridges already constructed under the 1956 act, the cost for doing that in March had been $205 million. But in October, 6 months later, the cost was $330 million. So that 6 months' delay, according to Mr. Erickson's figures, resulted in a cost to the Government, if and when the structures are rebuilt to 17 feet, of $106 million. That was the cost of the 6 months' delay.

Mr. SCHERER. Counsel is interpreting the evidence, and I submit that counsel is grossly in error, because I have before me the memorandum from which I asked questions of Mr. Erickson and Mr. Siegle just yesterday. There were 2,259 structures authorized between July 1, 1956, and January 22, 1960. The testimony is that those structures were only authorized and he was to determine how many of those were built in that 3- to 4-year period. There have not been built 2,259 structures on the Interstate System in the last year; 2,250 were authorized between July 1, 1956, and January 22, 1960, and we do not know how many of these have been built. There is testimony that some of these have not even been started. Some of them are on the drawing boards. Some of them are in the process of being built now.

I am not going to review all of the testimony at this time, but we came to the conclusion, and it is clear in the record, that the delay, whether it was due to negligence or not, will cost $123 million. The additional cost of converting now as compared to the conversion as of October 31, 1957, is $123 million. October 31, 1957, was a few days after sputnik. That is the testimony in this record.

Mr. MAY. Mr. Chairman, it is true that Mr. Erickson testified 2,259 affected structures have been built since July of 1956. Those are the structures that will have to be revised if we now go back and raise the standards from 14 to 16 feet.

The point of Mr. Erickson's memorandum which is an exhibit, is that the 6 months' delay, according to his estimates, resulted in an additional cost of $106 million in just those 6 months.

Mr. SCHERER. I beg to differ with you, because I personally got this testimony in the record from Mr. Erickson and nobody disputed them at the time.

Mr. ROBISON. Will the gentleman yield to me?

Mr. SCHERER. Yes.

Mr. ROBISON. It might be this discussion is a little bit academic at this point. Perhaps I do not understand all of the record fully, but referring to General Besson's letter of October 1, 1959, it says:

> It is realized that some rural structures have already been built with a 14-foot vertical clearance and that others with the same clearance are under construction.

But then he adds:

> It is not expected that these structures should be modified at this time.

So far I don't remember anybody from the Defense Department telling us that in their opinion we will have to rebuild or modify any or all of these existing structures that may be included in this 2,259 figure that you have used.

Mr. MAY. Perhaps, General, you might talk a little bit on the problem of the existing structures. What do you, as Chief of Transportation, intend to do about them?

General BESSON. First let me say something on this question, of the number of bridges. I think it is important, just for the sake of the record, to get these figures straight, and I cannot reconcile all of the figures which I have read. I have not had an opportunity to read the whole record to date, but it was my understanding something over 2,200 bridges were authorized since the first of July 1956.

Mr. MAY. General, those are the affected structures that were authorized at less than 16 feet.

General BESSON. That is correct. But I cannot then reconcile the fact that there have been 2,000 bridges since the first of January 1959 which have suffered by virtue of this.

Mr. MAY. That is true, General. Many structures have been built. As a matter of fact, some 9,000. But not all of them are involved in this problem. That is very true.

General BESSON. Now, your question was——

Mr. SCHERER. 9,000 built?

Mr. MAY. But many of which are not involved in this problem. Some of them do not even have overhead clearances. It is not important.

Mr. SCHWENGEL. Mr. Chairman, I would like to ask the general a question.

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. It is this: Is not the fact that you knew that about one out of 60 million movements was affected a part of your problem to resolve? In other words, did that not enter into your consideration? We had testimony yesterday that there were about—I don't

remember the exact figure, but there runs through my mind the figure of about one and one-third movements to every 75 million movements. Something like that that was affected.

General BESSON. Yes, sir. There is no question but that this thing is a matter of degree. We have problems today in movements that are a relatively small percentage of our movements, but they are troublesome. I wouldn't try to say they are not. In my opinion we will always have some, no matter what standards are established. We will always have something that for good and sufficient reason has to be built greater than this standard and moved.

Mr. BLATNIK. If the gentleman will yield, on your point that the percentage of oversized defense movements is so small as to be perhaps insignificant and inconsequential—is that the point?

Mr. SCHWENGEL. No, I am not saying that at all. But this figure is correct, and their survey indicated it, and they had other figures on it too, and this made it a more difficult problem to resolve.

General BESSON. Yes, I agree with that, and I must say too that probably some of our thinking has been conditioned by the fact that no action we take is a cure-all for everything. We still have 27 percent of the structures that were incorporated into the system in 1956 that are less than our recommended standard. We are going to have to live with that for a long period of time, and we are going to have problems always.

I was asked what do I, as Chief of Transportation, intend to do about those? My answer is that by and large those structures which already exist are the highest type of construction which we have in the United States. The most recent type of construction. I do not think it would be advisable to do anything with them until you get along with the rest of the system and complete it to the desired standards, except if you develop specific case-by-case movement of something which would seriously inhibit the national defense, and which would require corrective action on a case-by-case basis.

Mr. MAY. General Pachler mentioned that he couldn't say today where he might need the particular highways. How can you now determine what structures you are going to revise at this time?

General BESSON. General Pachler's problem is a little bit different from the overall problem because I would believe that, with the deployment of some of our missiles in the United States and their attendant equipment, or installation equipment that is to go in there, they may well develop certain specific patterns of movement which might require specific action.

Mr. MAY. Is there any question in your mind, General, but what some of the existing structures will have to be revised upwards? Revamped and rebuilt?

General BESSON. I think it likely, but I have no specific knowledge of any specific structure on any specific route that at the present time would have to be so revised.

Mr. MAY. So it is the intention to make a study of each route and each structure to determine whether or not that particular structure would have to be revised?

General BESSON. I would not say that. My idea is to get on with building this system to the new standard, and that, as instances developed where you had a specific requirement and you looked at the

thing from all of the possibilities at that time, and the economics involved in it, you would then reach your decision. But in my mind I have always completely disassociated the existing structures from the problem of what we do in the future.

Mr. MAY. If we look at that chart on the right-hand side of the room and we see that throughout the country patches of the Interstate System have already been built, and many of those structures now exist at less than 16 feet, do they not present bottlenecks for the movement of vital military hardware, at the present time?

General BESSON. They certainly do.

Mr. MAY. Is it the intention to leave those bottlenecks alone until the entire system is built?

General BESSON. Those bottlenecks are of varying degrees. They range in height from 14 feet up to some 17 feet. In some of those States there are already 16-foot clearances. I wouldn't do a thing with those unless there was a specific military requirement which developed which indicated the specific corrective action should be taken in that area.

Mr. SCHWENGEL. In other words, General, you hope to cross the bridge when you get to it.

General BESSON. These were existing bridges which I would cross when I come to them. Yes, sir.

Mr. MAY. These bridges will not be revised to prepare the country, or the military, to meet an emergency situation?

General BESSON. I do not want in any way to act like I am defensive on this thing, but it is the fact that we are talking about a limited number of movements. We have always, if I may use the word, muffed our way around the difficulties which we have in existence. We would have to continue to do that, and I think it far more important to get along with building the new structures of the future, and at the appropriate time take up the problem of the correction of those of lesser standards in the past.

Mr. SCHWENGEL. Do you agree that it might be more important to get the highways built, or at least certain important trunklines in the highway system?

General BESSON. As a generalization I would say yes. I would want to get a little guidance from my technical people, before I apply this generalization to the specifics, but I would say, yes, as a general thing it is far more important to get the highways in.

Mr. BLATNIK. Mr. Mumma.

Mr. MUMMA. General, I was just wondering, now that Mr. Schwengel mentioned 6 million movements, if you would send a load of groceries from Lebanon on an Army truck out to Indiantown Gap, would that be a movement that is in that 6 million?

General BESSON. I would think so. Yes, sir.

Mr. MUMMA. All I am trying to develop is the point that——

General BESSON. Yes, sir.

Mr. MUMMA (continuing). That those things that are not movable are very much in the minority, and your figure of 6 million is sort of padded up, and you are putting in everything that you can possibly put in.

General BESSON. Frankly, I am not familiar with the specific figures which are referred to here, but it is true that our military, our outsized

military units, are very small in number compared with the total number of military vehicles, for example, which we have to move. And I am not prepared to state what the percentage in the divsion is, but I am sure it is a fraction—a very small percent. Let's say 1 or 2 percent, perhaps, that are involved.

Mr. MUMMA. I do know during the war they rode up the Indiantown Gap railroad, which is sort of an antiquated trunkline railroad, but they moved thousands of tanks out of the Third Armored and Fifth Armored Division areas, which were put on the bridge there, and I think there was never any trouble moving them.

Mr. SCHERER. General, the committee indicated that it thought perhaps there was some undue delay on the part of your agency in the handling of this matter. In connection therewith I want to ask you a question similar to the one asked by Congressman Schwengel.

It is vitally important that this Interstate System of Defense Highways be completed at the earliest possible time in case we do have a military emergency, is it not?

General BESSON. Yes, sir. Yes, sir.

Mr. SCHERER. You were asked whether or not you were concerned about some of the problems that arose as a result of a delay last year in your Department of Defense and the Bureau of Public Roads? Were you concerned last year between January 1, 1959, and September 10, 1959, when the Congress delayed for 9 months in supplying $900 million that was needed to keep this program near the construction level as provided in the 1956 act?

General BESSON. I was aware that they were having problems, but then I had enough problems of my own not to concern myself too much with the specifics of it.

Mr. SCHERER. Did you ever try to estimate how much harm was done to the Interstate System by that delay, and by our failure to supply $900 million to the trust fund to meet its need to keep this program near the 1956 level?

General BESSON. I have not done that, sir. No, sir.

Mr. SCHERER. You know we were $900 million short of funds that were necessary to keep this program near the 1956 level, do you not?

General BESSON. I have read that, sir.

Mr. BLATNIK. Will the gentleman yield?

Mr. SCHERER. You know the Congress was aware of that on January 1, 1959, do you not? You can take the fifth amendment to some of these questions, if you want to. I am just trying to pinpoint that the kind of delays that we have here in the legislative branch are somewhat similar to those you have in the executive branch. I do not condone either.

Mr. BLATNIK. Will the gentleman yield? If we agree that there was a delay here by coincidence we are fortunate that we have saved money here, because by not having to rebuild the overpasses, we have saved money because these gentlemen were not able to make up their minds on adequate clearances.

Mr. SCHERER. I do not think all of the highway departments and directors will agree on that.

Mr. BLATNIK. Gentlemen, to conclude the hearing, the official determination is now 16 feet, in view of the very intensive review and a reevaluation, and the probing and seeking and searching into all pos-

sible and foreseeable avenues with regard to the defense needs for adequate clearance. Now, is the 16-foot clearance adequate for defense in its fullest concept both in peacetime movements and any emergency, both for the present and for the foreseeable future?

General BESSON. In my opinion, the 16-foot clearance is a very substantial improvement over the current 14-foot standard. In my opinion it will take care of certainly most of the needs of the future. In my opinion, no matter what standard you establish, there will always be some percentage of your loads which will cause you difficulty and you will not be able to move except by circuitous routing and selection of specific routes.

Mr. BLATNIK. If this will be adequate for our present and foreseeable future, then why did you recommend 17 feet?

General BESSON. My recommendation of 17 feet was the consensus of the recommendations which were made to me at that time, and they included, generally speaking, an allowance of 1 foot for unforeseen contingencies. I think that some allowance for unforeseen contingencies was prudent, but I cannot say that I feel that the Department of Defense will fail to discharge its mission in this area of 1 foot between 16 and 17.

This becomes a very difficult problem and a matter of judgment and evaluation. My evaluation, based on the facts available to me as of October 1, 1959, was that 17 feet was a reasonable standard for this country to adopt.

Mr. SCHERER. General, do you feel, in view of the testimony that has been adduced at these hearings that, before we go forward with the 16-foot clearance, that this committee should ask the Defense Department and the Bureau of Public Roads to again take a look at this thing and determine whether we should have a 16-foot or 17-foot clearance?

General BESSON. In my opinion, based on the nebulous area in which we are talking, there would be little useful purpose served in a further scrutiny of this thing.

If I may say so, one of the factors contributing to the delay of the past has been the inability to sort out and segregate out specific requirements which could be forecast in the future. I think, certainly, you have all of the evidence which is required at the present time, and what you will get before you complete your hearings, to allow your committee to establish a position as to what you think it ought to be.

Here again I must say, no matter whether it is 16 feet or 17 feet, there is no categorical right or wrong in this thing.

In building for the future, as an engineer, I always like to build as big as I can, but I am sure we will live with 16 feet. We would prefer 17 feet.

Mr. SCHERER. You would prefer 17 feet?

General BESSON. Yes.

Mr. BLATNIK. You feel that the additional 1 foot of 17 feet over 16 feet—General, you feel that that additional 1 foot would be justifiable and warranted insurance today for you?

General BESSON. This is my feeling, sir, but I must say again I am not questioning the judgment of anyone who would say he did not think that 16 feet would do. I am not trying to hedge in my opinion on this thing but I am trying to be as honest as I can. There is just

no categorical answer to this thing. Seventeen feet will give us less problems in the future and will give the scientists more leeway than 16 feet. Our major designers have come up and said they can live with 16 feet. That statement is just as good as their judgment is.

Mr. BLATNIK. What is the final factor that swung the pendulum in favor of the 16-foot determination? You were unable quite fully or to the satisfaction of the Commerce Department, to justify the 17-foot clearance from the standpoint of defense requirements.

General BESSON. This, in the final analysis, was judgment. It is somebody's judgment, based on the record as laid before him. And I will again say that the Army and the Air Force both stated after my letter of the 1st of October 1959, that while they preferred 17 feet they could get along with 16 feet.

Mr. BLATNIK. Again I repeat my question, What was the final factor that swung the pendulum? Was it the factor of cost, that is, weighing the cost versus more adequate accommodation of your military needs in a border or marginal area?

General BESSON. Mr. Chairman, I think you really ought to address that question to Mr. McGuire and to Mr. Douglas who finally affirmed the Defense position on this thing. But from my own standpoint I must say, if it was not a question of cost, we would probably go to 30 feet. I won't say 30 feet. An an engineer I could not say that. But really, I say you cannot ignore the fact that cost is a consideration in this thing, and what do you get for the extra amount of money it takes.

Mr. SCHERER. Could it be—if cost was a factor—could it be the thing I just mentioned a few moments ago, that is, the fact that we were unable to go ahead with this program as we contemplated, and that we were short of money? Could that have had some influence if cost was a factor?

General BESSON. I will have to answer that, sir. If you ask me that question I will have to answer that question honestly. I will tell you that at the time that I talked to Mr. Tallamy and Mr. Tallamy was having his difficulties with this funding procedure, he told me that the funding problem was a very serious one and that the action then being contemplated by the Department of Defense would aggravate an already serious problem, and he did not make any attempt to deter me from my recommendation, but he said in effect, "You had better have your ducks lined up."

Mr. SCHERER. You heard of the criticism by people, both within and without the Congress and both within and without the administration, that we are building to standards that are too high? You have heard that?

General BESSON. I have heard that. Yes, sir.

Mr. SCHERER. And was that discussed when you talked to Mr. Tallamy?

General BESSON. No, sir.

Mr. SCHERER. This criticism about excessive standards and frills?

General BESSON. That was not discussed between me and Mr. Tallamy, because I don't know what Mr. Tallamy's opinion on that is, but I felt that the standards were adequate.

Mr. SCHERER. But the precarious financial condition of the trust fund at the time was discussed, was it not?

General BESSON. Yes, sir.

Mr. CRAMER. Will the gentleman yield?

Mr. SCHERER. And the only people that can supply the money to do this job is the Congress of the United States. Is that not right?

General BESSON. That is my understanding.

Mr. BLATNIK. Any further questions? Mr. Cramer.

Mr. CRAMER. I have just two questions I would like to propound to clarify this question in my mind.

There was testimony yesterday that I believe there were 31 items of the 1,015 items that would be affected and shipped requiring above a 14-foot clearance. There were 31 items of the 1,015 that would be affected by requiring over 16-foot clearance. That is about 3 percent of the over 14-foot items and I tried to find out yesterday what portion of that 3 percent would be affected by the 1-foot differential of 16 feet to 17 feet.

General BESSON. We still do not know the answer to that question, Congressman, but I would think that we would be able to get it and furnish it for the record.

Mr. CRAMER. There would be no way of estimating that as to whether it would be one-third, or two-thirds?

General BESSON. My estimate would be that it would be a relatively small proportion of these that exceeded that, but this would be just a pure guess and I base it on the general trend of loads.

Mr. CRAMER. In other words, it would be a small proportion of the 3 percent affected by the 1-foot difference?

General BESSON. No. I meant that in reverse. I meant that most of them were probably in the 16- to 17-foot area, but this is a complete guess on my part.

Mr. CRAMER. You can provide that information for us, can you not?

General BESSON. I think I can.

Mr. CRAMER. Assuming it will not take too much time to get it.

General BESSON. Yes, sir. We will see if we can develop it and furnish it for the record.

(The information requested was furnished as follows:)

EXHIBIT 41A

MARCH 2, 1960.

HON. JOHN A. BLATNIK,
Chairman, Special Subcommittee on the Federal-Aid Highway Program,
House of Representatives.

DEAR MR. CHAIRMAN: At the time I appeared before your committee on February 18, 1960, to testify on the Department of Defense's recommendation for an increase in the vertical clearance standard for the National System of Interstate and Defense Highways, I was requested by Representative Cramer to identify how many of the previously reported 31 movements of military items exceeding 16 feet would be affected by the 1-foot differential of 16 feet to 17 feet. I advised that I would furnish such information for the record as soon as it could be obtained.

Of the 31 movements exceeding 16 feet in height made during calendar year 1958 for which permits were obtained by the military, 2 movements exceeded 17 feet in height. A ditching machine, 18 feet 11 inches in height when loaded on a trailer, was moved from Fort Ord to Hunter-Liggett Military Reservation, Calif., and returned.

The following tabulation shows that all 31 movements were for relatively short distances:

Distance of movement	16 feet to 16 feet 6 inches	16 feet 6 inches to 17 feet	Over 17 feet	Total
Less than 100 miles	13	3	2	18
100 to 250 miles	9			9
250 to 500 miles	4			4
Total	26	3	2	31

I trust the above satisfactorily answers the question for your committee.

Sincerely,

F. S. BESSON, Jr.,
Major General, U.S. Army,
Chief of Transportation.

Mr. CRAMER. Secondly, on the $123 million figure involving conversion from October 31, 1957, as I get it from your previous testimony, you indicated all of the bridges as far as defense purposes are concerned, probably would not have to be converted to 17 feet, would they?

General BESSON. My statement was that any bridges that are now built should be left alone, and we should get along with building the system for the future, except as we develop a specific requirement which, when analyzed, would justify, on the basis of the facts with respect to that specific structure, some sort of a change.

Mr. CRAMER. The point I am making is that all of the structures that were built to a lower standard since January of this year, that all of those for defense purposes would not have to be reconverted to a higher standard.

General BESSON. That is correct.

Mr. CRAMER. According to your own estimates.

General BESSON. That is correct.

Mr. CRAMER. If you made a study of what would be needed for your movements.

General BESSON. Yes, sir.

Mr. CRAMER. So actually the $123 million figure is not a true figure——

General BESSON. It is an outside figure.

Mr. CRAMER (continuing). Of what it will cost for defense purposes, is it?

General BESSON. Yes.

Mr. MAY. At this moment you do not know how many might have to be revised, do you?

General BESSON. That is correct.

Mr. MAY. It could be, depending on where the structures now exist and what routes might have to be used, and what routes might be the most important routes, it could be that all of those structures might have to be revised and no one will know until, as you suggest, a detailed study is made of the routes and the structures. Is that true?

General BESSON. I want to say two things: First, I agree it is conceivable they could all have to be raised higher for specific problems;

second, I did not recommend any detailed studies of this thing. I said if a case develops where you have difficulty, you would then analyze that particular case.

Thirdly, I must then say that, to the extent that I say our system would be inhibited by what has been built in the last couple of years, this applies equally to those 27 percent of the forecasted structures which were in existence in 1956, and which were incorporated into this system. And I still come back to the statement I made that I feel we should build the new system and correct the old standards of the past and the standards which have been in existence for 35 years as the situation develops, but our major attention should be toward the future.

Mr. MAY. There is one point I am not sure I am clear on, General. You mentioned as a case develops where we might experience some difficulty. Could you give us an example of that?

General BESSON. Yes. If we have a military installation someplace which developed a pattern of traffic and the specific loadings there gave us difficulty and it was in sufficient volume, or it looked like we couldn't solve this reasonably and rationally by alternate routes on the highways, and through using other transportation facilities available to us, be it water, rail, or air, we would then analyze that specific case and make a recommendation as to what the corrective action should be.

Mr. CRAMER. And you would steer clear of as many of these low road clearances as you can.

General BESSON. Certainly. You would route yourself to protect against that, as we will have to do for many years in the future because of the 6,000 bridges which existed in 1956.

Mr. MAY. As the situation now exists, there is no intention of fully utilizing the entire system for the transportation of all of your military hardware?

General BESSON. That is not correct, Mr. May. We will use the system as it exists to the maximum capability that it has, and where the capability will not meet our requirements we will then have to find an alternate way around, and I trust that we will be as successful in the future as we have been in the past in so doing.

Mr. BLATNIK. General, we thank you for your testimony. I will say it was very impressive the frankness with which you stated your case. It is a novelty. Perhaps it was warranted, but I agree it is easier with hindsight to see things than with foresight. I do have a strong feeling, however, that a man of your competence and experience and ability, and a man of the experience and competence and ability of Mr. Tallamy, when faced with this situation in January 1959, could arrive certainly at a determination by February 1959, instead of just recently in February, on February 8, 1960.

It would have been a great saving of expense to the Federal Government as well as to the States and a great saving of time that could have resulted from the uncertainty the States found themselves in in the last 2½ years.

Mr. SCHERER. Mr. Chairman, you were expressing your own opinion and not that of the committee. I may eventually concur with you, but I want to weigh all of the evidence. But I assume you were speaking for yourself.

Mr. BLATNIK. Off the record.

(Discussion off the record.)

Mr. BLATNIK. Thank you, General.

General BESSON. Yes, sir.

Mr. BLATNIK. The hearings are recessed until 2 o'clock this afternoon when General Schriever will be on the witness stand.

(Whereupon, at 12:30 p.m., the hearing was recessed until 2 p.m. of the same day.)

AFTERNOON SESSION

Mr. BLATNIK. The hearings of the House Public Works Committee on the Federal aid highway program will be resumed.

For our first witness this afternoon we are privileged to have Lt. Gen. B. A. Schriever, commander, Air Research and Development Command, U.S. Air Force.

General, we welcome you this afternoon, knowing you have been under very heavy pressures for some time. We appreciate this very much.

STATEMENT OF LT. GEN. B. A. SCHRIEVER, COMMANDER, AIR RESEARCH AND DEVELOPMENT COMMAND, U.S. AIR FORCE

General SCHRIEVER. I am very glad to be here.

Mr. BLATNIK. General, just for the record, would you give your full official title or designation?

General SCHRIEVER. Yes, sir.

Mr. BLATNIK. And give in your introductory statement what your responsibilities consist of?

General SCHRIEVER. My name is Bernard A. Schriever, lieutenant general, Air Force, and I am in command of the Air Research and Development Command of the Air Force, with headquarters at Andrews Air Force Base in the local area here. Our command stretches, of course, throughout all of the United States, and we are responsible for the research and development of all of the weapon systems that are introduced into the Air Force inventory.

Mr. BLATNIK. Mr. May?

Mr. MAY. General, how long have you held your present position as head of the Air Research and Development Command?

General SCHRIEVER. I assumed command of ARDC, I think on the 13th of May of last year.

Mr. MAY. General, what were your duties just previous to that?

General SCHRIEVER. I was commander of the Ballistic Missile Division located in Englewood, Calif.

Mr. MAY. How long did you hold that position?

General SCHRIEVER. I held that position from mid-1954 until April of 1959.

Mr. MAY. Was that the Western Development Division of the Air Research Development——

General SCHRIEVER. It was called the Western Development Division when it was first organized back in 1954 and it was later changed. It was about 1957 when it was changed to the Air Force Ballistic Missile Division and it is a division of the Air Research and Development Command.

Mr. MAY. Was the Western Development Division established to take over management of the Atlas missile program?

General SCHRIEVER. Yes, sir; the primary purpose of the establishment of the Western Development Division was to accelerate the development of the ICBM and get this particular missile operational as quick as technology would permit.

Mr. MAY. The program to accomplish that purpose was not new. That was in existence prior to that date, was it not, General?

General SCHRIEVER. There was a program called Atlas at that time; yes, sir.

Mr. MAY. There has been some testimony here that the basic configuration of the Atlas, as it exists today, was established sometime about December of 1954. Would that be accurate?

General SCHRIEVER. Yes, sir; the basic configuration of the Atlas as it exists today was established after a very detailed design study, systems analysis, in December of 1954.

Mr. MAY. So that in 1954 some thought had to be given to the eventual transportation of the Atlas missile?

General SCHRIEVER. Yes, sir.

Mr. MAY. Was it not at that time that the configuration established in 1954 would be the configuration of the Atlas missile that would be transported for test purposes?

General SCHRIEVER. Well, frankly, I would say that we were not considering as a primary problem the transportation of the Atlas when we laid down the design in December 1954.

Mr. SCHERER. You were thinking about getting it off the ground?

General SCHRIEVER. That is just about right.

Mr. MUMMA. What was the diameter of it?

General SCHRIEVER. The diameter of the Atlas at that time—I might go back just a little bit further because there had been an Atlas design prior to that which was a five-engine configuration which had a diameter of 12 feet. The new design configuration was a three-engine configuration with a diameter of 10 feet.

I might say that in 1955 we made a number of studies concerning the transportation of the Atlas and we considered the possibility of going through the Panama Canal by boat. We looked at our C–133 in terms of transporting it by air, and we also were looking at the possibility of transporting it by road.

Mr. MAY. General, according to our information, the first Atlas was fired on June 11, 1957. Is that true?

General SCHRIEVER. 1957; June of 1957. I think it was the 11th; yes, sir.

Mr. MAY. And the second in September of 1957?

General SCHRIEVER. That is right.

Mr. MAY. There has been some testimony with respect to the Russians firing sputnik, calling attention to our missile program. But you indicate that we did have a missile program in existence long before October 1957, and there did exist transportation difficulties prior to October of 1957.

General SCHRIEVER. We certainly had a missile program prior to 1957. I might say that we made a very exhaustive survey of a route for transporting the Atlas missile from California—San Diego—to Cape Canaveral, and we did find that we could transport it by taking

the vernier engines off, and the lowest clearance I think we had was 13 feet—11 or 13 feet 10 inches. We had to let air out of the tires in order to get under that.

Mr. MAY. So in 1955 the low bridge clearances were presenting a problem to you in transportation?

General SCHRIEVER. Yes, sir.

Mr. MUMMA. Could I ask a question there?

Mr. BLATNIK. Mr. Mumma?

Mr. MUMMA. Did you actually make that study or did the Leonard Bros., from Miami, make it, or was it a conjunction of both?

General SCHRIEVER. I am sorry I can't be specific in this answer. I know I had my own people on it. Now we may have had a trucker as a contractor on it, I just don't recall.

Mr. MUMMA. That is who you had, I understand.

General SCHRIEVER. We actually ran an actual dry run, as we call it, using a trailer and running through, and actually we ran a dummy missile through there.

Mr. MUMMA. They had pictures here to illustrate that entire trip.

Mr. JONES. You are still talking about the Atlas missile?

General SCHRIEVER. I am talking about the Atlas missile and talking about the early days of determining whether we could or could not transport it by road.

Mr. MUMMA. Thank you.

Mr. MAY. General, was transportability a factor which had to be considered in arriving at final configuration of the missile?

General SCHRIVER. Not for the ICBM. We did not consider it as a primary factor. Now, we certainly considered it. That is one of the reasons, of course, that we wanted to reduce the diameter. We also wanted to have an airlift capability, and we did initiate a program of modifying our C–133 airplanes so that they could airlift the Atlas and we now have airlifted several Atlas missiles.

Mr. MAY. We have had testimony that two have been flown.

General SCHRIVER. I am not sure of the exact number. We just started lifting the Atlas by air.

Mr. MAY. Is that to insure that you will have available another mode of transportation or do you intend in the future to fly most of the Atlas missiles?

General SCHRIEVER. I really can't answer. From a research and development standpoint it would be desirable, of course, to fly the missile from San Diego on to Cape Canaveral. You do not have all of the—well, there just is less vibration and other factors that are involved. We would like to have more than one mode of transportation available to us, certainly from an overall standpoint.

Mr. JONES. How did you transport most of the missiles to Cape Canaveral?

General SCHRIEVER. We transported the Thors by air, although almost all of the transportation in California was by road. The Titan has been transported by air from Denver to Cape Canaveral.

Mr. JONES. In sections?

General SCHRIEVER. The Titan is a two-stage missile and I just don't have the details. I think it is 85 feet long. I am pretty sure we can't get the full Titan in one airplane. We can get the full Atlas in.

Mr. JONES. Have you had some experience, General, with sensitivity of this Titan missile? Isn't it supersensitive and didn't you have some difficulty in the movement of the Titan?

General SCHRIEVER. No, sir. From a structure standpoint, the Titan, of course, is a more rugged structure than the Atlas. The Atlas has to be pressurized at all times to retain rigidity. We did have trouble in one movement of the Titan, but this was because someone forgot to open the valve to equalize the pressure in the missile.

Mr. JONES. The reason I asked that question, we had one witness who said that was the difficulty with the Titan, but reviewing the statements made by either you or the Research and Development people of the Air Force, he stated that was not true, and I wanted to get that in the record.

General SCHRIEVER. No, sir; the Titan is even a more rugged structure than the Atlas, and I would have no concern in moving the Titan by road or by air.

Mr. JONES. Thank you.

Mr. MAY. General, could you explain to us the intended operation of the Atlas missile, how you expect to use the Atlas missile?

General SCHRIEVER. Well, the Atlas will be located—there are presently planned 13 squadrons of Atlases. The way in which they will be dispersed or deployed, as we call it, at each of the bases will be somewhat different. The first ones are what we call soft squadrons, and then later on we go into what we call the hardened squadrons where there will be one missile located in an underground silo at a distance of some miles from the other missile. There will be nine missiles in this configuration in a squadron located around one support base. The missiles can, and in some cases will, be as much as 50 or 60 miles distant from the support base.

Mr. JONES. Just a minute. May I ask a question? General, these points that you have fixed firing platforms, where do you expect to have a reserve center to supply additional missiles to the launching platform in the event that more is needed than is there at the moment of their use?

General SCHRIEVER. Our present plan calls for a 10-missile squadron of which 9 will be on launchers and 1 in reserve. Now, if you need more than one in reserve, it will have to be transported into that particular support base. The missile in reserve will be maintained at the support base.

Mr. JONES. Well, now, the reserves, where will they be in relationship to the use station?

General SCHRIEVER. Well, this depends on exactly the location of the particular launcher. As I indicated, it might be as much as 50 or 60 miles from the support base, or it could be as close as 9 or 10 miles.

Mr. JONES. Then that would bring into play consideration of the size of the overpass or any impediment that you might have on the highways of getting the missile to the launching pad.

General SCHRIEVER. In that local area, yes, sir; because our plans there are to transport, of course, across the road.

Mr. JONES. Thank you.

Mr. MAY. General, could you tell us where these 13 bases will be located? Will they be scattered in various sections of the country?

General SCHRIEVER. Yes, sir. I can furnish this for the record, but I can name some of them right now.

Mr. MAY. Just an indication.

General SCHRIEVER. Well, we have a base, the first base is at Warren Air Force Base, in Cheyenne, Wyo.; Vandenberg Air Force Base, in California; Offutt Air Force Base, in Nebraska; Lincoln Air Force Base, in Nebraska; Fairchild, in Washington—I am about running out of names.

Mr. MAY. We understand that perhaps there would be one in, say, Abilene, Tex., and Roswell, N. Mex., and Plattsburgh, N.Y.; does that sound reasonable?

General SCHRIEVER. Yes, sir; Plattsburgh, I know, and we are planning some for the Southwest area too. I would rather not be on the record on naming some of these places. I know Plattsburgh is one; yes, sir.

Mr. MAY. I am just looking for an indication that these are going to be widespread.

General SCHRIEVER. They will be widespread.

Mr. MAY. You could use much of whatever road systems that are available to you in moving the missiles?

General SCHRIEVER. They will be widespread except along the eastern seaboard, most of them are in the Middle West and Far West.

Mr. JONES. Why do you stay off the eastern seaboard? Vulnerability?

General SCHRIEVER. No; the population density, other factors, we are trying to locate them adjacent to existing SAC bases, things of that kind have all gone into our site selection criteria.

Mr. MAY. There has been some discussion here concerning future missile systems. We have heard some testimony relating to the new Minuteman missile which we understand is a solid fuel propellant. Would you explain to the subcommittee the difference in the liquid fuel missiles and solid fuel propellants and indicate to us what that might do as far as configuration is concerned?

General SCHRIEVER. Yes, sir. Well, the Minuteman is a solid fuel missile and one of the great advantages, of course, of solid fuel is their potential greater simplicity, both from an operational and a maintenance point of view.

Mr. SCHERER. What about size?

General SCHRIEVER. They are smaller. Of course, we are lifting a considerably smaller warhead here, too, in the Minuteman than in the Atlas and Titan. I think this is a point that I would like to make with the committee because there is, I think, the misconception in many quarters that, as soon as the Minuteman comes along, missiles such as the Titan and Atlas will be obsolete. We do not believe this in the Air Force at all because the Atlas and Titan have a much greater payload capacity.

We think that we will need a certain percentage of our force composed of this type of missile, certainly through the 1960's and possibly even beyond that. So the Air Force and certainly my prediction is that we will have Atlas and Titan-type missiles for the next 10 years or more in about the numbers that are presently planned.

The Minuteman is a much smaller missile. It weighs on the order of 65,000 pounds and it is a relatively high density missile and there

are no problems associated here at all with respect to transportation on the existing highways with the clearances that are now available.

Mr. JONES. General, the Jupiter missile and Atlas missile are so similar in configuration; so what you would say about the Atlas would equally apply to the Jupiter, would it not, in transportation?

General SCHRIEVER. Well, the Jupiter and Thor are two that are quite similar and are both single engine missiles and the Jupiter has been airlifted also from Huntsville to Cape Canaveral and it is about the same size as the Thor. There would be no problem as far as U.S. roads are concerned, but of course, it is IRBM, and I am not exactly sure what some of the problems over in Europe are railwise.

Mr. SCHERER. Have we finished?

Mr. JONES. Yes, sir.

Mr. SCHERER. Let me ask, Have you planned to increase the transportation of these missiles by air? You said you preferred to carry them by air.

General SCHRIEVER. We probably will move most of our missiles from the factory to the support base by air whenever we possibly can; yes, sir.

Mr. SCHERER. You said most of the support bases are near airfields?

General SCHRIEVER. One of the primary criteria is to use existing SAC bases wherever possible.

Mr. SCHERER. You move them much faster by air, certainly, than over highways?

General SCHRIEVER. That is right.

Mr. SCHERER. We were discussing during these hearings the fact that you need to move these as rapidly as possible.

General SCHRIEVER. That is true.

Mr. SCHERER. You can move much more rapidly by air than you would by the best type of highway you can design.

General SCHRIEVER. That is correct.

Mr. SCHERER. That is obvious but I wanted it for the record.

General SCHRIEVER. Yes, sir.

Mr. MAY. Is speed so essential in the transportation of, say, the Atlas missile?

General SCHRIEVER. You mean to get it to the support base?

Mr. MAY. Yes. I am wondering if the plan is to have these installed at the support bases or the sites. Is there the urgency connected with the transportation that there might be in the use of other items?

General SCHRIEVER. I think the answer to that is "No"; there is not the urgency involved because normally you would have, once a squadron is in place, you would have the nine missiles there, you would have one in reserve.

Mr. SCHERER. Pardon me; I think what you said is true. For 2 or 3 days now, we have been trying to develop or at least counsel has been trying to develop the fact that urgency is needed and you have to move these missiles fast across the country. I am glad you have established that this is not so.

Mr. MAY. I think, General, maybe some people have received wrong impressions. There is a great deal of urgency connected with the transportation of other pieces of equipment, not necessarily the Atlas missile, but when we talk about the guns, the tank recovery ve-

hicle, and some of the larger pieces of military equipment, in an emergency there would be greater urgency to move those pieces of equipment?

General SCHRIEVER. That is true, because we plan to use the missile where it is located and this other equipment you might have to get to another place in order to use it and we would not have a large stockpile of missiles stored somewhere to move into an operational base. This is not planned.

Mr. SCHERER. That is the very point I have been trying to make for 3 days, that after you start shooting there will be no necessity of moving missiles any more, will there?

General SCHRIEVER. Well, this is essentially correct. I think certainly during the first employment of our missile strength there will be a period of time before we could be able to then reload. If we fire once, the silo has to be repaired, as there is some damage involved. You can't put a missile into it immediately anyway.

Mr. SCHERER. There isn't too much urgency in getting these missiles to their bases, is there, initially?

General SCHRIEVER. Initially, no, sir.

Mr. JONES. General, aren't you speaking now of the Atlas missiles and larger missiles?

General SCHRIEVER. I am speaking of the ICBM types that are a fixed-base type of missile.

Mr. JONES. You are speaking about a fixed-base missile?

General SCHRIEVER. Yes, sir.

Mr. JONES. Of course, what you say, then, would not apply to missiles that, like the Jupiter, can be fired at almost any point or some of the Army missiles?

General SCHRIEVER. If they are designed to be mobile to begin with, of course not.

Mr. JONES. That is what I mean. If they are mobile missiles, then this question of transportation is a very comparative matter, don't you think?

General SCHRIEVER. Yes, it is, and, of course, we are planning, in addition to the fixed-base, hardened, and dispersed Minuteman, we are also planning for a mobile Minuteman system. However, at the present time, it is confined to a rail mobility, although we have looked into the possibility of a highway mobile system, too.

Mr. JONES. Of course, this whole inquiry, as I understand it, is confined principally to the highway use by the Department of Defense and the dispersing of their military requirements. Of course, it would be hard to divorce military requirements away from urgency, wouldn't it?

General SCHRIEVER. That is right.

Mr. BALDWIN. Will the gentleman yield?

Mr. JONES. Yes, sir.

Mr. BALDWIN. General, you mentioned that the Minuteman will not be as large as the Atlas and you mentioned that the newer, later design of the Atlas was 10 feet in diameter. What would be the diameter measurement for the Minuteman as compared to the Atlas?

General SCHRIEVER. Just a minute. I think there are three stages and they all have a height of different diameter. I think I have it here. Let me get it.

The maximum diameter is 5 feet 8 inches for the Minuteman. That is the first stage.

Mr. ROBINSON. With vernier engines?

General SCHRIEVER. There are no verniers on the Minuteman.

Mr. BALDWIN. As I understood your testimony a little earlier, that more limited diameter as compared to the Atlas is such that you could carry these Minutemen on our existing road systems with the existing 14-feet clearance?

General SCHRIEVER. Yes, sir.

Mr. BALDWIN. Thank you.

Mr. SCHERER. What missiles will be used for these mobile bases?

General SCHRIEVER. The Minuteman.

Mr. SCHERER. The Minuteman, the smaller one?

General SCHRIEVER. Yes, sir.

Mr. JONES. General, let me ask you a question, purely hypothetical, and maybe in the immediate future as far as we know now. In the event that we are successful in our space exploration, and that we are able nd capable of putting up satellites with the Russians, and then they become of military significance, how will we be able to transport missiles like the Saturn, the clustered missiles that now can only be transported by barge?

General SCHRIEVER. Well, of course, I think that when you get into the space field, you really are getting into an area that presents some real problems and it is very difficult to read very clearly the crystal ball. Now on the Saturn, I believe that they are planning to move that by barge.

Mr. JONES. Yes, sir.

General SCHRIEVER. The very large million and one-half pound thrust engine, the single barrel, also will require clearances above 14 feet and this, of course, could be moved by road, but I have the figures here. I think it requires about 16 feet for this particular engine, it is called the F–I.

Now, as you cluster these, the only thing that can be done, as I see it, is to move either by barge or by ship of some type or move the pieces and assemble at the launch site.

Mr. SCHERER. Pardon me a minute. You are talking about space exploration.

Mr. JONES. We are already in the space business and we might as well talk about it.

General SCHRIEVER. Yes, we are talking about space and not missiles. I might summarize on the missile field, and it is very tricky to try to project yourself too far into the future, but it appears to me that the trend in our missile development is for smaller missiles rather than larger ones with probably the Atlas and Titan representing the largest missiles that we will have in our inventory in the foreseeable future.

This I would project quite a way in the future. On the other hand, in the space area, obviously the NASA has requirements for very, very large boosters which, as I see it, cannot be moved under any conditions on highways.

As we look into our military space programs, and I am thinking about such programs as the communication satellite, reconnaissance satellite, the warning satellite programs, the Dynasoar, which is the

first experimental effort on the part of the Air Force to get man into near orbital speeds, here the boosters will certainly tend to get larger.

As a matter of fact, a great deal of our planning with respect to the Dynasoar program is resolved around a booster diameter of something in the order of 12 to 14 feet.

So I think it is fair to say that our requirements in the space field will be for larger boosters which at this time it is impossible to forecast accurately exactly what size they will be except that from our standpoint, R. & E. wise, it would be desirable, other things being equal, because there are many factors that have to be considered, to have the greater clearance we can get.

Mr. JONES. There would not be the urgency in the satellite program that there would be in the military operations of the conventional type of missile system, would there?

General SCHRIEVER. No, sir; I don't think one could say that the defense of the country will depend upon our being able to move them on the road. We will find some other way of doing it if we have to.

Mr. JONES. So probably that is not a very real problem, certainly not at the moment?

General SCHRIEVER. No, it is not.

Mr. JONES. Of transporting these space satellites?

General SCHRIEVER. No; but I think that if you project it over a period of years, it could, because I can see a very high frequency of satellite activity in the areas that I mention having to do with intelligence, communications, and so forth, within the next 10-year period.

Mr. ROBISON. Would you yield, Mr. Jones?

Mr. JONES (presiding). Yes, sir.

Mr. ROBISON. You would not see the necessity in that area for transportation of those items everywhere throughout the country?

General SCHRIEVER. No, sir; the best that one can foresee now that we would be making most of those launches from either the west coast or the east coast.

Mr. ROBISON. Possibly two different sites.

Mr. JONES. General, with the development of solid propellants, are you getting any indication now that you can reduce the size of the missile or is that a fair relationship?

General SCHRIEVER. Are you talking about space boosters?

Mr. JONES. Yes, sir.

General SCHRIEVER. There has been considerable research, not a great deal of fabrication of hardware in the higher thrust solid propellant field, and here there has been a lot of thinking toward sort of a prefabrication idea; in other words, building pieces and having the techniques to put those pieces together at the launch site.

This looks quite promising so that it might well be that in the solid area, when and if we get into the large boosters, we will not have the requirement for clearances such as we would have in the liquids.

Mr. MAY. General, I think we have established some very significant points. You are concerned in your position with items other than missiles?

General SCHRIEVER. Yes, sir.

Mr. MAY. So I think we have established that there is no urgency connected with the transportation of the Atlas missile. We have established that the Atlas missile can be transported without the vernier engines, the Atlas missile then on its transporter is 13 feet 10 inches—it is called a transtainer. You can lower it to a height of 13 feet 6 inches, and, therefore, it could fit through the 14-foot vertical clearance structure.

Secondly, there is no problem connected with the Minuteman missile because the Minuteman missile, due to a small diameter, can easily fit under the 14-foot structure.

However, there is great urgency in an emergency in connection with the transportation of your larger items such as the guns and tanks and tank recovery vehicles and perhaps in the future, in some of your missile systems, and therefore, the need exists for an adequate system of defense highways for the transportation of those items other than the large missiles. Is that a true summation?

General SCHRIEVER. I think that is a true summation as it relates to the missiles. Now I am not an expert in the other items of equipment that you mentioned.

Mr. MAY. General Besson wrote to you on June 17, 1959. And he included with his letter a very lengthy letter dealing with the problem presented by the vertical clearance structures.

Mr. SCHERER. You said that counsel's summary was true with reference to missiles, but you were unable to comment on his summary with reference to other items because that was out of your field?

General SCHRIEVER. Yes, sir; that is right.

Mr. MAY. Yes, General, we have had testimony relating to those other items.

General SCHRIEVER. I don't question what you say excepting I am not the expert.

Mr. SCHERER. I do.

Mr. JONES. The general here has testified as to the missile program and that will be limited to his observations in that activity.

Mr. MAY. What General Schriever has established, if we were looking simply at the missile program, there would be no need today to revise the standards upward from 14 feet?

Mr. SCHERER. That is right. I agree.

General SCHRIEVER. That is right.

Mr. MAY. So if the need exists, it exists for some other reason other than the missile program?

General SCHRIEVER. I think that is a fair statement.

Mr. SCHERER. That is what we have been trying to show for 3 days.

General SCHRIEVER. I agree with that.

Mr. MAY. Thank you, General.

When General Besson wrote to you on June 17, 1959, he said, and I will quote from his letter:

> I am seriously concerned that the 14-foot clearance will unduly restrict the movement of missiles and missile components and I have, therefore, after coordination with three military departments, undertaken to get the Federal Highway Administrator to raise the clearance to 17 feet. This may not seem like a major increase, but it can be achieved at a reasonable increase in cost and will give a 50-percent increase of circular cross-section area of what can go through the underpass.
>
> To a layman like myself, it appears this might be a very important assistance to the missile designing.

Is that true, General, that it would be of great assistance to the military designer?

General SCHRIEVER. Well, I think if you took the missile in a very narrow sense and considered only the missile, that you probably would say that, today, that is not true, but we have in our business pretty much considered missiles, that is, ballistic missiles and our military space program sort of in the same kettle of fish, or at least synonymous, and we are talking about the same kinds of things.

So if you put it in the broader connotation, I would think if you were looking ahead for a period of 50 years, which, as I understand it, is what we are thinking about in the terms of the use of these highways, that it would be highly desirable to get the maximum clearance.

We certainly are going to have—I can give you one example. On the Dynasoar program, it would certainly be helpful to have a greater clearance when we start thinking about diameters 12 to 14 feet instead of the 10 feet which we are using right now.

All of these missiles have skirts, so that in addition to the diameter of the tank, why you have usually a flare which requires even further clearance. So in a broad context, if you narrow it down to just missiles, I think the answer is "No." If you think about it in a broader sense, to me, it would be desirable to have a greater clearance.

Mr. MAY. So we come back to the need for increase in the vertical clearance standard from 14 feet to something greater than that. The need exists because of items other than missiles?

General SCHRIEVER. Yes.

Mr. MAY. However, if the vertical clearance is increased upward, that might be of some benefit to the missile designs in the future?

General SCHRIEVER. It could have some benefits, yes, sir.

Mr. SCHERER. What is your recommendation, how high a vertical clearance should we have?

General SCHRIEVER. Well, I would think that at least from where I sit, my responsibility Air Force wise, that I could not make a specific recommendation on how high it should be because I think that, in the movement of missiles and associated equipment, probably the higher you could get it the better, but I think other factors would be the governing ones.

What is the cost and other considerations that are involved.

Mr. SCHERER. You realize if we make it 17 feet, then somebody is going to build something either in the military field or in the commercial field that requires a greater clearance than 17 feet.

General SCHRIEVER. I am sure that we will always be building some which will not go under. That is just like—I have forgotten who it was—that built something down in their basement and then they had to tear it down—it was a boat and they couldn't get it out of the basement.

Mr. SCHERER. If we could get some of you experts to tell us what it should be, I am willing to listen, to suggestions for a 15-, 16-, or 17-foot clearance.

General SCHRIEVER. I think that no one is expert enough to really forecast this far in advance. I think that one must use a combined judgment of all the factors involved and, from a military standpoint, I think it should go as high as is practical and I would say 16 or 17 feet, if it could be done, without breaking the country, why we ought to do it.

Mr. BALDWIN. Will the gentleman yield?

Mr. SCHERER. Yes.

Mr. JONES. Mr. Baldwin?

Mr. BALDWIN. General, there has been some testimony I think a day or two ago, by Mr. Chacey, that when they asked for the recommendations of the various departments, the Air Force and Navy as to what clearance they could live with, that then the recommendation coming in from the Air Force, as I recall, was 16 feet. Does that indicate that as far as you are concerned and as far as requirements of the Air Force are concerned as you see them that 16 feet would be adequate for your foreseeable purposes?

General SCHRIEVER. Well, yes, sir; we could certainly live with 16 feet.

Mr. JONES. Are you speaking about missiles now? Are you talking about overall?

General SCHRIEVER. To get it back in the narrow sense of missiles again, I think that definitely we can. On space systems, I know that a lot of them we are not going to be able to move through 16 or even 20 feet. We are going to have to do it some other way. But the transportation department of the Air Force, which I am not a part of, has indicated that they had a relatively large number of shipments that they had to make during the past couple of years that required clearances of over 14 feet.

I am not sure exactly how many. I think the totals for the whole Defense Department was something like 1,000 in 1958 and maybe 1,500 or 1,600 in 1959. So this had a very distinct bearing on the Air Force's recommendation as a whole, distinct from my position as commander of R. & D. and looking forward into the future as to what some of the systems might look like in terms of size.

Mr. JONES. Did you collaborate in the discussions of the Air Force with respect to making a recommendation?

General SCHRIEVER. I was asked originally to respond to General Besson's letter. My staff did discuss this with the air staff. I did not personally. Subsequently this was further discussed with the Air Force, so that I would say there has been coordination between my command and Air Force Headquarters.

Mr. JONES. General, do you recall the letter of August 1959, in which you communicated with General Besson in which you made a recommendation and in which you concurred in 17 feet vertical height?

General SCHRIEVER. I concurred in 17 feet as being desirable. I don't know. The language may have not made that entirely clear. I think the rest of the letter would have made it clear though in that it was very difficult to foresee clearly the future, but that we would have requirements for space systems that probably would better be met by a clearance of 17 feet.

Mr. JONES. Here is the exhibit that was offered some days ago. It is exhibit 28. I wonder if you would look it over and refresh your recollection. Would you mind, General, reading the memorandum?

General SCHRIEVER. Yes; this is in reply to a letter from General Besson addressed to me:

> Your letter of June 17, dealing with the problem of clearance restrictions on future defense highway systems, has been thoroughly reviewed by my staff and I fully concur with increasing the 14-foot limitation to 17 feet.

Although the trend on ballistic missile weapons systems appears to be toward smaller physical dimension, there are certain present requirements which will need a 17-foot clearance. For example, the F–1 rocket engine, when loaded on a flatbed trailer, will easily exceed the 14-foot limitation.

The impact of development of propulsion systems in the 1-, 5-, 10-million pound range cannot be evaluated at this time. Present state of the art does not clearly indicate whether such propulsion systems will take the form of larger individual units or clusters of smaller units.

It appears that since it is virtually impossible to accurately visualize overall clearance requirements during the next 50-year period, a 17-foot clearance might benefit the Nation, especially in planning new underpass construction. Although forecasting is extremely difficult in this dynamic area, our staff is available for consultation with your Mr. Chacey with regard to the possible clearance problem. Basic missile planning is accomplished at Ballistic Missile Division, Inglewood, Calif. I would recommend that Mr. Chacey contact this headquarters to arrange for his trip to the west coast if it is your desire to obtain further details.

Mr. JONES. Did you have subsequent discussions with General Besson or members of his staff?

General SCHRIEVER. No, sir; I did not.

Mr. JONES. So that was the last memorandum or communication in which you expressed an opinion as to vertical height of these overpasses?

General SCHRIEVER. No, sir; not the last one. The last one with General Besson, as I recall, I am pretty sure I am right, but not the last communication I had on the matter.

Mr. JONES. What was the last communication on that problem?

General SCHRIEVER. The last written communication was a memorandum to Mr. McGuire.

Mr. MAY. General, we have another piece of correspondence that becomes important. May we make this June 17, 1959, letter from General Besson to General Schriever an exhibit to go with the enclosure, exhibit 42?

Mr. BLATNIK. Without objection, so ordered.

EXHIBIT 42

JUNE 17, 1959.

Lt. Gen. B. A. SCHRIEVER,
Commander, Air R. & D. Command,
Andrews Air Force Base, Washington, D.C.

DEAR GENERAL SCHRIEVER: I am enclosing a rather lengthy letter dealing with the problem of clearance restrictions on the new System of Defense Highways. These highways and the State system counterparts are currently designed to give a 14-foot clearance on underpasses.

I am seriously concerned that the 14-foot clearance will unduly restrict the movement of missiles and missile components. I have, therefore, after coordination with the three military departments, undertaken to get the Federal Highway Administrator to raise the clearance to 17 feet. This may not seem like a major increase, but it can be achieved at a reasonable increase in cost and will give a 50 percent increase of circular cross-section area of what can go through the underpass. To a layman like myself, it appears this might be a very important assistance to the missile designer.

I assure you that this is a very real problem and a pressing one. If we are to be successful in our discussions with the Federal Highway Administrator, we must have strong support from the agencies responsible for missile development.

Mr. D. K. Chacey, my Assistant Chief for Transportation Engineering, is available to meet with your staff at their convenience if they would want to augment the detail presented in the enclosed letter.

Obviously, if the increased clearance is not important from your standpoint, I want to know that fact. On the other hand, if you feel it important to try to

increase the flexibility of our surface movements over the next half century to the extent I have set forth, I would appreciate your strong support at the earliest possible time.

Sincerely yours,

F. S. BESSON, Jr.,
Major General, U.S. Army,
Chief of Transportation.

JUNE 17, 1959.

Lt. Gen. B. A. SCHRIEVER,
Commander, Air R. & D. Command,
Andrews Air Force Base, Washington, D.C.

DEAR GENERAL SCHRIEVER: In 1956 Congress provided for the completion, within a 16-year period, of the 41,000-mile National System of Interstate and Defense Highways with full control of access. Ninety percent of the estimated $40 billion cost will be paid by the Federal Government. The authorizing legislation required that the geometric and construction standards adopted for this system should be adequate to accommodate the types and volumes of traffic forecast for the year 1975. According to the standards adopted, more than 20,000 grade-separation structures being built into the system will have a vertical clearance of 14 feet. The normal life of these structures is at least 50 years.

The adequacy of the 14-foot vertical clearance standard has been a matter of concern to me ever since its adoption. From information that has come to my attention on guided missile development, mobile defense concepts, future space vehicles, radars, and launching platforms, it appears that the 14-foot clearance will be inadequate. Accordingly, as executive agent for the Department of Defense in matters pertaining to highway needs, I asked the military departments for an evaluation of future requirements for movements over public highways and for recommendations relative to modification of the vertical clearance standard. The Department of the Air Force recommended that consideration be given to increasing the vertical clearance standard to 16 feet. The Deputy Chief of Staff for Military Operations recommended that the Department of the Army should request a minimum 17-foot vertical clearance. The Department of the Navy did not specify a dimension in excess of 14 feet but concurred, as did the Department of the Air Force, in recommending the standard be changed to 17 feet as an appropriate Department of Defense position.

As an example of the highway development program, I am attaching a map of California marked to show the National System of Interstate and Defense Highways, the designated California freeway system, and tertiary State routes. Because of the economics involved, the routes in blue will normally pass over the routes in red and black. Also, at intersections of red- and black-marked routes, there will be a 14-foot limitation which will normally be on the Interstate System. Upon completion of the National System of Interstate and Defense Highways and the California freeway system, if built to present standards, it will be virtually impossible to move any vehicle and load exceeding 13½ feet in vertical dimension beyond areas bounded by the red- or black-marked routes. Accordingly, we must conclude that the size of future highway movements will be limited to 13½ feet in vertical dimension, since there will be no practical way to go around the many underpass structures.

Based on the information and recommendations received, I have informally proposed to the Federal Bureau of Public Roads modification of the vertical clearance standard to a minimum of 17 feet. However, to obtain the support of the Bureau of Public Roads of the Department of Commerce and the State highway departments, which agencies are responsible for the construction of these highways, I have been asked to show more specific requirements and justification for the proposal.

If it is correct to assume that the most critical dimension in missile design is diameter, an increase in this dimension by 3 feet, as would be possible by increasing the vertical clearance from 14 to 17 feet, could be of great significance. Such an increase in diameter would increase the cross section of a missile approximately 50 percent and thus greatly increase the potential thrust of a missile motor which would be transportable over highways. If this is important, it would appear that similar diametric considerations would apply to moving radars and components of space cargo or passenger vehicles. In this connection, I am attaching a chart showing height, and distance moved, for the 1,015

overheight movements certified important to national defense during calendar year 1958 by designated Army, Navy, and Air Force representatives.

If an increase in the vertical clearance standard is justified, this may prove to be our last opportunity to provide for our military units and equipment the vertical clearance vital to our defense. Further, if we fail to take advantage of the present opportunity to modify the standards, we can expect movements over our public highways to become more restricted with respect to vertical dimension than they now are.

If you believe my concern is justified, I would greatly appreciate your giving this matter your personal attention and furnishing me a statement identifying in as much detail as possible the advantages in having some specific vertical clearance in excess of 14 feet. On the other hand, if you believe the 14-foot vertical dimension will be adequate, I would also appreciate it if you would advise me of your conclusion.

If you, or your staff, have any questions, please call my assistant, Mr. D. K. Chacey, extension 53976.

Sincerely,

F. S. BESSON, Jr.,
Major General, U.S. Army,
Chief of Transportation.

Memo for record: Letter was written at the direction of General Besson and is self-explanatory.

Mr. MAY. General, we have here a copy of a memorandum from the Assistant Secretary of Defense, from Secretary McGuire, to you. I will read it. You don't have a copy available with you?

General SCHRIEVER. I may have a copy. Just a minute.

Mr. SCHERER. What is the date, Mr. Counsel?

Mr. MAY. It seems to be undated.

General SCHRIEVER. Yes, I have that.

Mr. MAY. Our copy does not have a date on it, General. Do you know on what date that was forwarded?

General SCHRIEVER. 21st of December.

Mr. MAY. December 21.

General SCHRIEVER. Yes, sir.

Mr. MAY. I will read it and you might follow me. It is a memorandum for Lt. Gen. B. A. Schriever, Commander, Air Research and Development Command.

EXHIBIT 43

Attached herewith is a copy of a proposed letter to the Secretary of Commerce pertaining to the subject of the recommended minimum clearance for bridges to be adopted for the National System of Interstate and Defense Highways. There is also attached herewith a copy of a letter from the Air Force to General Besson dated December 7, 1959, with amendment dated December 11. Under date of August 1, 1959, we corresponded on this subject with General Besson. Dr. York is of the opinion that the proposed letter to the Secretary of Commerce is a reasonable position. There is attached herewith a copy of the letter from Dr. York on this subject. I would appreciate your comments on the proposed letter to the Secretary of Commerce as well as on any of the attachments you care to comment on. It is my feeling that this proposal of 16 feet is a reasonable one inasmuch as the 1 foot gained by going to 17 feet does not answer the problem of substantial outsized pieces that might be fabricated in the future but does answer the problem of our foreseeable missile requirements. In addition, it would, from the point of view of future building, make that portion uniform.

General, did you also have conversation with Secretary McGuire in relation to this matter prior to the receipt of this memorandum?

General SCHRIEVER. Yes, I talked to him prior to that.

Mr. MAY. What was the conversation at that time?

General SCHRIEVER. I don't recall exactly. It had to do with the subject of whether or not 16 feet or 17 feet should be the position that the Department of Defense took with respect to what our vertical clearance planning should be. It was on that subject. I don't recall the details.

Mr. MAY. Were there any conclusions drawn during that telephone conversation preceding this memorandum?

General SCHRIEVER. We discussed this at quite some length and I brought out some of the points that it was impossible to forecast or predict exactly what the requirements would be in a 50-year time scale. I pointed out to him the missile picture. I pointed out to him the space picture as I saw it. And that was about the first time that any matters came up having to do with what the costs would be and the fact that a lot of work had already been done, which I was not aware of at the time that I received my first letter, and that the general conclusion of the conversation was that as far as I was personally concerned, the higher the clearance, the better. But, I certainly could not categorically recommend that it be 17 feet or even 16 feet, for that matter, but that I felt that space systems, particularly, that the higher the clearance we got, the more flexibility we would have in our transportation system. This was in essence our conversation.

Mr. MAY. So that no conclusion was reached prior to your receipt of this memorandum plus the other material enclosed therewith?

General SCHRIEVER. No; I am sure that this was not a telephone conversation. I saw him in his office and then I had a telephone conversation with him prior to seeing him in his office, and I essentially agreed or indicated that if the Department of Defense recommended a 16-foot clearance that I would go along with that as far as my position was concerned.

Mr. JONES. In other words, General, you would prefer 17 feet but you had no objection to 16 feet?

General SCHRIEVER. I would prefer 25, if we could get it.

Mr. MAY. Did the Secretary mention to you that one-third of the States already were building at the 16 feet?

General SCHRIEVER. I don't recall whether he mentioned that specifically, but he did say that a considerable number of overpasses had been built to that dimension whereas others had been built to the lower dimension and this was not clear to me earlier in the game. This was the first time that I really knew that a number of structures had already been built, some of them at 14 feet and some of them at 16 feet.

Mr. MAY. You didn't know prior to that time?

General SCHRIEVER. I did not know prior to that time. I mean, I am talking now about the new network.

Mr. MAY. General, if, in your conversation with Secretary McGuire, you indicated that you would prefer to see 17 feet but would concur in 16 feet, if the Defense Department recommended 16 feet, that did take place?

General SCHRIEVER. To the best of my knowledge, it did during our conversation.

Mr. MAY. I was wondering why the Secretary would have forwarded you this memorandum plus the other material on the 21st of December.

General SCHRIEVER. I don't know. He said that he would forward to me the letter that he proposed to send out and I think this is what happened. I was there one late afternoon, and I think this was sent over about the next day, as I recall, although it may have been a day or so later, but it was about that sequence.

Mr. MAY. Mr. Chairman, may we make that memorandum from Secretary McGuire to General Schriever exhibit 43?

Mr. BLATNIK. Without objection, so ordered.

(The document referred to was marked "Exhibit 43" for identification.)

Mr. MAY. We have here a copy of your answer to Secretary McGuire, dated December 23, 1959. I will read it. You may correct me if I make an error.

It is to Hon. Perkins McGuire, Assistant Secretary of Defense (S. & L.), Washington 25, D.C.

EXHIBIT 44

DEAR MR. MCGUIRE: (1) In my letter to General Besson of August 1, 1959, I indicated that it would be desirable to increase the 14-foot vertical highway clearance to 17 feet. However, since almost a third of the States have standardized on 16 feet, I feel we are obliged to support this criterion nationwide as a reasonable, known military requirement. It is obviously not possible to predict or commit ourselves to specific dimensions of all future missile vehicles. We are able to identify our Atlas, which would require in excess of a 15-foot vertical clearance when transported by highway in certain configurations, dependent on the operational readiness status required. The 16-foot clearance will satisfy this requirement. The record of outsized movements cleared by the Military Traffic Management Agency in 1958 further substantiates the need for a 16-foot vertical clearance as a minimum requirement.

(2) Therefore, as I indicated to you by phone, I concur in the conclusions and recommendations in your proposed letter to the Secretary of Commerce. Further, I agree with the Director of Transportation, Headquarters, USAF, that we should provide a growth factor to accommodate future weapon systems.

General, what is said in this letter is the fact that you are willing to concur in the 16-foot standard if it is proposed by the Defense Department, but evidently you would prefer the 17 feet, as it might grant a little more leeway. Is that true?

General SCHRIEVER. Yes, sir; I think that is correct.

Mr MAY. I notice you mention almost one-third of the States have standardized on 16 feet. Evidently that was discussed with the Secretary?

General SCHRIEVER. I did not discuss it in that detail. I think he put that in his memorandum. I had my staff check this and I presume this is correct. At least, my staff checked it out. I have my staff member here.

Mr. MAY. Did that have some bearing on your concurrence in the 16 feet?

General SCHRIEVER. Oh, very definitely. The fact that a lot of work had already been done in this connection had quite a bit of bearing on it because I was unaware that this was the case, as I say, earlier in the year, when I first answered General Besson's letter.

Mr. MAY. Mr. Chairman, this makes most signficant the testimony we received the other day indicating that it is not a true fact that one-third of the States built at 16 feet. There is testimony showing that 16 States have a standard of 16 feet. Four of those States have built their bridges on the Interstate System at 16 feet.

How do you feel about the new standard of 16 feet, General, in the light of the fact it is not true that one-third of the States built at 16 feet?

General SCHRIEVER. Well, I think I can only answer this in this way, and that is that I would like to see as much of an increase as possible; and the 16 feet, if this has been standardized in certain areas, I think other factors have to be brought in to bear on it.

Mr. MAY. Mr. Chairman, may we make that December 23 letter exhibit 44?

Mr. BLATNIK. Without objection, so ordered.

General, in research and development, in testing and proving missiles, do you engage in any research work in any future type of missiles?

General SCHRIEVER. Well, we are responsible for anything considered future as far as the Air Force is concerned.

Mr. BLATNIK. You have covered this?

Mr. JONES. Yes, sir.

Mr. BLATNIK. Any further questions?

Mr. BALDWIN. I would like to ask one question.

Mr. BLATNIK. Mr. Baldwin.

Mr. BALDWIN. General Schriever, you have mentioned the requirements that might be necessary to the space program as compared with the missile program. If I have a correct understanding of the division of the responsibilities now in the governmental agencies involved, as far as you are concerned and the section of the Air Force which you have responsibility for, you have the responsibility for the missile program for the Air Force. Is that correct?

General SCHRIEVER. And the space program.

Mr. BALDWIN. As far as the Air Force is concerned, you certainly don't have responsibility for the space program, that portion that is under NASA?

General SCHRIEVER. No; but we have a very substantial program which is under Air Force responsibility, as a matter of fact, approaching well in excess of $3 million a year. So we have quite a program that would be categorized as space, like the surveillance, the warning, communications, the discovery programs; these are all programs which are under the direction of the Air Force.

Mr. BALDWIN. I see. OK, I think I have a clarification.

General SCHRIEVER. These are clearly in line with the present arrangements between NASA and the Department of Defense and there is no problem between us on this at all.

Mr. BALDWIN. Thank you.

Mr. BLATNIK. Mr. Mumma?

Mr. MUMMA. General, I am very glad to have you straighten out the size of these missiles. I was under the impression that the trend was going to be to make them larger and your testimony, and you should know, is that they are going to be made smaller. I guess it is like everything. You take a watch today: 25 years ago you wouldn't contemplate some of these watches that are being made. Now, what I am particularly interested in, they are going to be made smaller and here is a man that ought to know.

Mr. SCHERER. There is common misconception on the part of the public as to the nature and size of these missiles.

General SCHRIEVER. Well, we, of course, are very happy to see the trend go toward smaller missiles, too, because it means a lot in terms of operational and maintenance simplicity and also in terms of cost, so we feel that, in a sense, we have made a breakthrough in this regard which in terms is also a break for the taxpayer.

Mr. BLATNIK. That is not the only trend toward smaller missiles. I did not realize that your agency was also involved in space work, as far as the Air Force is concerned, with research and development. That is why I asked about future missiles and getting into space work. You are in an entirely different realm.

General SCHRIEVER. Space work is in an entirely different direction which I have pointed out here. If you would like to question me further on it, I would be very glad to answer, but I think I have covered that pretty well. The trend is definitely in that direction sizewise.

Mr. BLATNIK. You say in other directions. Would that be in the direction also of low density fuels requiring larger vehicles?

General SCHRIEVER. We certainly will, during that next few years—I would say part of the next 10 years—depend largely on liquid propellants for our space work at least for the first and second stage space work. That doesn't mean that solids will not be coming along; I think they will be, too, but we will also be using lower density fuels. Hydrogen is going to play a very important part, so the trends are definitely for larger stages for space application, rather than it being dependent solely on Atlas, Titan, Thor, Jupiter type of missiles such as we are today.

Mr. BLATNIK. Do you have any idea how large the Russian moon-shot missile was?

General SCHRIEVER. I can give you an estimate. I will give you my personal estimate, probably in the order of 12 to 13 feet in diameter, if it was in fact a single tank. It could have been a clustered tank, and if it was clustered, it would probably be a little larger than that, total overall diameter.

Mr. JONES. What would be the thrust on that, about a million and a half?

General SCHRIEVER. No, our best estimates indicate that the Russian lunar shot on their first stage boost is something in the order of 700,000 to 800,000 pounds of thrust; in other words, just about double our Atlas.

Mr. SCHERER. What kind of clearances do they have over in Russia?

General SCHRIEVER. I don't know. The road net over there, I understand, is not so good.

Mr. BALDWIN. General, just a question further on the space portion of your responsibilities. As I understand from your earlier comments, some of these requirements are such that you do not intend whatsoever to actually use the highways, but you are going to be using barges or something of that kind; is that correct?

General SCHRIEVER. I think we will have to find other ways of doing it on some of these very large boosters like the Saturn, which the Army or ABMA, now part of NASA, will be barging down. I don't know exactly how they plan to do it, but I have heard that they plan to use barges.

Mr. JONES. ABMA is located on the Tennessee River. It would be loaded on barges there, down the Tennessee, Mississippi, and intercoastal canal around to Cape Canaveral.

Mr. BALDWIN. Would it also be correct, General, to say you will not have the requirement of mobility for the space program that you have for the missile program because the missile program is directly related to emergency offense and defense where the space requirements of your program are somewhat different?

General SCHRIEVER. I can visualize right now no requirement for mobility in our operational space system.

Mr. BALDWIN. I take it from that, there wouldn't be the same need of building the whole 41,000-mile Interstate Highway System up to a standard that might be the maximum to move one of these space vehicles because you wouldn't have the same requirement for mobility all over that system now as you have possibly for the Minuteman.

General SCHRIEVER. That is true, although somebody reading my testimony 50 years from now—I would certainly not want to say that we won't be firing space vehicles including men in space from other places than just on the two coasts, and I think the crystal ball is simply too muddy to try to read it.

I think we won't have a requirement for mobility from an operational standpoint, but we might well have the requirement for transporting some larger boosters into other locations than just, say, Cape Canaveral or Vandenberg Air Force Base in California.

Mr. BALDWIN. Thank you.

Mr. BLATNIK. Any further questions?

General, we thank you very kindly.

General SCHRIEVER. Thank you.

Mr. BLATNIK. If there are no further witnesses, the hearings today are complete. We will resume again at 10 o'clock tomorrow morning. Tomorrow morning we will have the Assistant Secretary of Defense, Mr. McGuire, and the Federal Highway Administrator, Mr. Tallamy, which will complete and conclude our hearings on this program. The hearings are adjourned.

(Thereupon, at 3:30 p.m., the hearing on the above matter was adjourned until 10 a.m., Friday, February 19, 1960.)

DEFENSE HIGHWAY NEEDS

FRIDAY, FEBRUARY 19, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE ON THE
FEDERAL-AID HIGHWAY PROGRAM,
Washington, D.C.

The special subcommittee met, pursuant to adjournment, at 10:15 a.m., in room 1302, New House Office Building, Hon. John A. Blatnik (chairman of the special subcommittee) presiding.

Present: Representatives Blatnik, Baldwin, Clark, Cramer, Jones, Mumma, Robison, Scherer, Schwengel, Smith, and Wright.

Also present: Walter R. May, chief counsel; John P. Sonstandy, associate counsel; George H. Martin, administrative assistant; and Kathryn M. Keeney, clerk of the subcommittee.

Mr. BLATNIK. The special subcommittee of the House Public Works Committee will come into session, resuming its public hearings on certain aspects of vertical clearance of the Interstate and Defense Highway System.

We are privileged on the final day of testimony to have with us this morning, the Honorable Bertram D. Tallamy, Federal Highway Administrator, who is very well known to the members of the committee.

Mr. Tallamy, we welcome you here this morning and welcome your assistance in bringing to a conclusion the particular problem into which we have been making inquiry in the past several weeks.

Mr. Tallamy, do you have any opening statement or shall we proceed with the discussion and interrogation?

STATEMENT OF BERTRAM D. TALLAMY, FEDERAL HIGHWAY ADMINISTRATOR

Mr. TALLAMY. Thank you, Mr. Chairman.

I have no prepared opening statement, but in acknowledgement of your introduction I do wish to say that I appreciate the courtesy that this committee has always given the Bureau of Public Roads in our joint efforts to advance the highway program, and it is very happy we are to cooperate with you in this study.

Mr. SCHERER. I hope you feel that way after you have testified.

Mr. BLATNIK. Mr. May will proceed with the interrogation.

Mr. MAY. Mr. Tallamy, when did you become Federal Highway Administrator?

Mr. TALLAMY. Early in 1957—February, I believe the date was.

Mr. MAY. Have you been under the impression that the Department of Defense had approved the proposed geometric construction

52678—60——23

standards for the Interstate System prior to their adoption in July 1956?

Mr. TALLAMY. Well, I was under the very definite impression, and I am sure that it is true, that the Department of Defense and the Bureau of Public Roads have worked jointly over the many years in connection with the development of standards for all of the highways, and I recognize that, from having been a highway administrator in New York State—and I have subsequently inquired into this and I find it is true—they were working in cooperation with the Bureau during a long period ahead of the actual establishment of the standards in 1956; and that there was concurrence, although not a formal document that had been submitted in that regard.

Mr. MAY. We have received testimony from Mr. Chacey previously that he was working in the Chief of Transportation's Office at that time and did have the responsibility, and was not consulted, and did not approve the standards prior to their adoption in 1956.

Mr. TALLAMY. I don't know if he was asked to officially approve the standards, but I am quite sure that there was collaboration between Mr. Siegle and Mr. Chacey over the years in regard to the development of standards; and, as I understand it, also the Department of Defense did actually submit in 1949 a report to the Congress on the Interstate System, pointing out that 14 feet was acceptable, and again testified to that effect in regard to the Interstate Highway System legislation in 1955.

Mr. MAY. Yes, that is true, Mr. Tallamy. When did you first become aware——

Mr. SCHERER. Pardon me. Just a minute, Counsel. Then a year following the adoption of the standards by the Bureau of Public Roads and the State highway officials the Department of Defense, after a survey of all of its agencies, again approved the 14-foot clearance?

Mr. TALLAMY. Yes. In October 1957 the Department of Defense officially and formally approved the standards.

Mr. SCHERER. And that was after a survey by the Department of the Army, the Department of the Air Force, and the Department of the Navy, was it not?

Mr. TALLAMY. Yes, sir.

Mr. SCHERER. So whether they were consulted formally at the time that the geometric standards were adopted in 1956 does not matter so much, because they were certainly not prejudiced in view of their findings a year later.

Mr. TALLAMY. I would say not.

Mr. MAY. Mr. Tallamy, when did you first become aware that the 14-foot vertical clearance standard might be a problem to the Department of Defense?

Mr. TALLAMY. I became very definitely aware of it on March 16, I believe the date is, of 1959. My staff at different levels had been having some informal and formal meetings with the Department of Defense representatives prior to that for a year or so, but I can't recall or have any recollection of any discussions on that subject with them.

Mr. MAY. We have received testimony that your subordinates knew of the problem much earlier. For example, in December 1957, Mr.

Chacey expressed his concern to Mr. Siegle informally at the American Association of State Highway Officials' meeting in Chicago. In March of 1958 Mr. Erickson furnished estimates for the additional cost of building the structures to 16 and 18 feet.

In June 1958, Mr. Royster was informed by memorandum that Mr. Chacey anticipated an early letter which he prepared stating the conclusions of the Department of Defense which would definitely involve greater clearances.

In August 1958, Mr. Erickson furnished another estimate to the Chief of Transportation's Office which included additional cost for increasing the underclearance by 2-foot increments up to 24 feet; and in January 1959 your subordinates were furnished informally an unsigned draft letter from the Chief of Transportation which actually requested that the standard be raised to 17 feet.

Mr. Tallamy, do you not think that this was a matter which should have been brought to your attention much earlier than it finally was?

Mr. TALLAMY. Well, I don't think so. The reason they didn't was that the Department of Defense itself was studying the problem, as I understand it, during that period up until certainly the time of the informal letter, and they had been contacting our men in order to get the areas of cost that would be involved in the development of standards to a higher minimum vertical clearance, and they had not come to any decision. There was not anything really up before me. If there had been something definite then I think that my staff should, when they have decided that they have all of the information necessary to make a presentation, at that time they should present it to me.

Mr. MAY. We might look at the period of January 1959 where it was pretty well resolved by the military people in the Department of Defense that 17 feet did seem reasonable to them, and it appeared to be their position. That was in January of 1959.

Mr. SCHERER. Just a minute, Counsel. I agree that that may be your interpretation of the testimony, but I don't think that. At least that is not my interpretation of the testimony that in January the Department of Defense had resolved this issue—in January of 1959.

Mr. MAY. It seemed to have been resolved sufficiently so that they drew up a draft letter requesting a raise in the standards to 17 feet. Now, this concerned a possible change in the standards which would result in a considerable increase in cost, and it was an urgent matter due to the continuous building of substandard structures. Perhaps if the matter was referred to you, Mr. Tallamy, let us say in January of 1959, you might have been able to have the problem more expeditiously resolved. Do you agree to that?

Mr. TALLAMY. Well, I think if it had been presented to me in January I would have requested the same studies that the staff decided were necessary for further consideration of it. So that I do not believe that there would be any substantial time differential—there might have been some, but I don't think it would have been of a great difference because the staff felt certain additional studies ought to be had for presentation to me, and undoubtedly I would have felt the same thing.

Now there might have been some timesaving there, but on the other hand I would like to point out that the staff undoubtedly recognized

that my immediate staff and myself were involved in some very, very important matters having to do with the highway program itself.

That was the time that we were considering the need for additional financing of the Interstate System, and we were developing all sorts and types of tables and computations. I had to appear before many different committees and administrative leaders and State highway people and others in respect to that part of the program, even prior to preparing the matter for hearings, which took place later. And they undoubtedly took that into consideration and recognized that they would have to obtain undoubtedly the added information which they did.

Mr. MAY. We have had testimony regarding that, Mr. Tallamy, and it does not seem as though too much more was developed from January of 1959 to October of 1959, when they finally made an official request to raise the standard to 17 feet. They did draw up another couple of estimates. They did make a study of oversize shipments, and they were able to contact General Schriever.

But other than that, the situation does not seem to have changed much from January to October.

Mr. SCHERER. Mr. Chairman, I think counsel is well prepared and very capable, and doing an excellent job, but isn't he now, in asking these questions, taking over the prerogative of this committee in drawing conclusions as to what the evidence showed by saying to this witness, we have this evidence which shows thus and so? That is a conclusion drawn from this evidence, and counsel states it as a matter of fact when he questions the witness. I know this is a legislative proceeding but certainly such a question would not be permissible in a court. I realize that we are not subject to their rules of procedure, but we make a statement in asking the question as if it is a fact. Further it is an argumentative question.

I think one of the things that this committee is going to decide, is whether there were these delays. That is the purpose of this hearing.

I think counsel should be required to ask the factual questions without making an argument or drawing his own conclusions of what the evidence has already shown. I do not want to criticize counsel because I feel we have an excellent staff, and I feel that they are well prepared, but I feel I am justified in making this request.

Mr. MAY. I will rephrase my question, Mr. Tallamy. What was developed between January 1959 and October 1959 to add to the justification for the raising of the standards to 17 feet? Do you recall?

Mr. TALLAMY. As far as I am concerned, there was a very material thing that took place. When we had the meeting in the latter part of May, General Besson and I discussed the recommendation which had been submitted in considerable detail, and we jointly agreed that additional studies ought to be made on the part of the Department of Defense. The reason that I requested that, and he agreed to it was that, as I said before, this was a very critical period in which we were endeavoring to obtain funds for the Interstate System program which will enable it to advance.

If we had been—if the Congress had not in its wisdom provided additional funds last year for the highway trust fund—we would

have had no Interstate Highway System program at all insofar as new work is concerned, and this year we would have had only a $500 million program.

So in view of the many arguments that were going on in relation to the need for additional funds, the high cost apparently of the Interstate System, I was certain in my mind that I had to have complete justification before I could go to the Congress, or before the administration, or the general public, in support of a program which would increase the cost again. So I presented that to General Besson with a few suggestions in regard to review——

Mr. SCHERER. May I interrupt, Mr. Tallamy? At that very time you are talking about, weren't there charges being made both in and out of Congress that your standards were too high?

Mr. TALLAMY. Yes.

Mr. SCHERER. That there were frills on this system, and that we had too wide rights-of-way?

Mr. TALLAMY. Yes.

Mr. SCHERER. And that the interchanges were too complex, and this program was too costly.

Mr. TALLAMY. Yes.

Mr. SCHERER. Weren't you and was not this Roads Subcommittee subjected to that type of attack from many quarters?

Mr. TALLAMY. Yes. Both of us were.

Mr. SMITH. If the gentleman will pardon a further interruption, I don't recall any charges that the overpasses were too high.

Mr. SCHERER. General standards.

Mr. SMITH. Were there any charges about 14 feet being too high?

Mr. TALLAMY. No, sir. I do not remember that specifically being mentioned, but the point was—if I may continue—the point was in my mind that I had to be absolutely sure that the Department of Defense could stand up before your committee and before everybody else and defend their recommendation completely, because I was taking it and naturally should take it, and it would involve a substantial increase in cost, and if we could not defend it then it might very well jeopardize the whole program. So therefore——

Mr. SCHERER. Let me interrupt for just a minute, please.

Mr. TALLAMY. Yes.

Mr. SCHERER. The point, Mr. Smith, that I was trying to make, was that at a time when all of us knew we were under attack whenever we tried to increase standards, or keep the existing standards, we really had to justify our position, because the general charge was that standards were then too high and too costly. I realize what you said is true. Nobody was saying that overpasses were too high. I don't remember that ever having been discussed on the floor, or any place else. I don't think anybody outside recognized the problem, but I made that point merely because I knew there had to be some justification if we are going to increase standards.

I know that there are some people now, not on this committee, but there are some people in and out of the Congress now complaining because these overpasses are apparently too low at 14 feet, and they were the same people who criticized you and me and the administration because they said we were designing these highways and bridges too big.

Mr. TALLAMY. So, Mr. Counsel and Mr. Chairman, I feel that there was a very definite thing accomplished by the time used between May 29 and the first of October of that year, because the Department of Defense did review it again, and even though they did not come up with a different recommendation, it satisfied me that they had reviewed it again and again and would be in a position to substantiate their recommendations. That was a very important thing. Now, whether from the first of the year until the first of October we could have compressed the time somewhat, possibly we could have in retrospect. But I doubt that it would have been enough to have made any substantial difference and still have obtained the security of background information which was necessary to defend the increased cost.

Mr. MAY. You do feel that your May meeting with General Besson then did contribute to expediting the eventual solution?

Mr. TALLAMY. I did. I do.

Mr. MAY. Which brings us back to the point that if the matter had been called to your attention in January of 1959, if you had met with General Besson at that time, perhaps we might have saved some period of time in the eventual solution.

Mr. TALLAMY. Well, it is possible. Yes.

Mr. MAY. Mr. Tallamy, we have already had testimony that on the first of October General Besson did make his official request to raise the standards; that the proposal was put to the American Association of State Highway Officials representatives at their convention in October; the Executive Committee of the American Association of State Highway Officials on the 10th of October; and the Chief Administrative Officers on the 11th, and they approved the raise in standards; and that on the 23d of October the AASHO officially submitted their approval to you; and then on October 27, just 4 days later, you did write to the Secretary of Commerce and recommended the change to 17 feet be approved.

I have here a copy of a memorandum dated November 6, 1959, directed to you, from the Under Secretary for Transportation of the Department of Commerce, Mr. Allen. Do you hvae a copy of that available?

Mr. TALLAMY. Yes, sir.

Mr. MAY. I will read that memorandum for you, Mr. Tallamy.

Mr. TALLAMY. Thank you.

Mr. MAY. It reads, and I quote:

EXHIBIT 45

The Secretary and I have been considering the problem raised in your memorandum of October 28 informing us of the action taken by the AASHO with respect to increasing the vertical clearance standard from 14 to 17 feet.

This raises the fundamental point as to whether the general fund should support the incremental cost of features that are entirely defense related, and whether the Department of Defense should support us in requesting appropriations for such a purpose. Even without such added appropriation support, there is involved a heavy additional expenditure obligation justified in behalf of the strategic needs of the country.

The Secretary and I feel that these are policy matters that should be coordinated with the civilian leadership in the Department of Defense in addition to their endorsement by a branch of the military services. For this reason the Secretary has written to the Secretary of Defense requesting his advice on the policy and budgetary aspects of this question. I enclose a copy of the letter for your information.

I do not anticipate that any decision on this matter will be made until we have received a reply from the Secretary of Defense and until the budgetary aspects are coordinated with the Bureau of the Budget.

The letter enclosed with this memorandum has already been put in evidence, and that letter asked for the advice of the Secretary of Defense with respect to the policy and budgetary aspects of the problem. That was forwarded on November 12, 1959.

Now, on November 27, 1959, the Secretary of Defense wrote to the Secretary of Commerce. Do you have a copy of that letter, Mr. Tallamy?

Mr. TALLAMY. Yes, I have.

Mr. MAY. I will read that:

EXHIBIT 46

DEAR MR. SECRETARY: I was not aware that the Department of the Army had proposed raising the standards for vertical clearances on overpasses on the National System of Interstate and Defense Highways from 14 feet to 17 feet, as noted in your letter of November 12, 1959.

I have directed a thorough study of the need for increasing vertical clearances on the Interstate System from the national defense viewpoint. Pending completion of the study and further communication with you, I recommend that you do not make a final decision on the increased clearance standards.

I appreciate your bringing this matter to my attention and I will advise you at the earliest possible date of my views with respect to both policy and budgetary considerations.

Mr. Chairman, may we make the letter of November 6, 1959, exhibit 45?

Mr. SMITH. Without objection, it is so ordered.

(The document referred to was marked exhibit No. 45 for identification.)

Mr. MAY. And the letter of November 27, 1959, exhibit 46.

Mr. SMITH. Without objection, it is so ordered.

(The document referred to was marked exhibit No. 46 for identification.)

Mr. MAY. That brings us up to November 27, 1959.

Now, on December 3, 1959, the Secretary of Commerce directed a letter to the Secretary of Defense, Mr. Gates, to which he received a prompt answer. I shall read that letter:

EXHIBIT 47

As requested in Mr. McElroy's letter of November 27, 1959, I will withhold approval of the increased vertical clearance standards for the National System of Interstate and Defense Highways.

General Besson's letter of October 1 requesting these standards had been represented to the Federal Highway Administrator as the well considered and coordinated viewpoint of the Department of Defense. Subsequent actions have been taken accordingly.

Uncertainties in proceeding with hundreds of projects now in design stage make early action imperative. I trust that further study directed by Mr. McElroy can be accomplished quickly, and that I may hear from you within the next few days.

Mr. Chairman, may we make that letter exhibit 47?

Mr. SMITH. Without objection, it is so ordered.

(The document referred to was marked exhibit No. 47 for identification.)

Mr. MAY. That brings us up to December 3, 1959.

On December 21, 1959, Assistant Secretary of Defense Mr. McGuire forwarded a letter to the Secretary of Commerce. Do you have a copy of that letter?

Mr. TALLAMY. I have, sir.

Mr. MAY. I shall read it, and I quote:

EXHIBIT 48

This refers to your letter of November 12, 1959, and Secretary McElroy's interim reply of November 27, 1959, concerning Major General Besson's recommendation of October 1, 1959, that a minimum vertical clearance standard of 17 feet be adopted for the National System of Interstate and Defense Highways. Secretary Gates has requested that I reply for him in this matter.

In accordance with procedures in effect since shortly after World War II, General Besson is responsible for advising the administrative head of the Bureau of Public Roads of the foreseen public highway needs of national defense once such needs have been coordinated within the Department of Defense. General Besson's letter, therefore, represented the coordinated official views of the Department of Defense.

However, in response to your inquiry, I have reviewed the need for a 17-foot minimum standard with the officials responsible for missile development and with General Besson. In this review I find that although a 17-foot minimum vertical clearance is desirable, justification exists for only a 16-foot minimum vertical clearance to meet presently foreseen requirements. This 16-foot clearance will make possible realistic standardization of military equipment, provide increased flexibility in the interchange of equipment among the various modes of transportaton, and facilitate dispersion and mobility of defensive and retaliatory weapons. The additional review in this case does not alter the longstanding official procedures between the Federal Bureau of Public Roads and the Chief of Transportation, Army.

The interest of the Department of Defense is entirely defense related. However, I am greatly concerned about the implication in your letter that the increased clearance has no potential value to the civilian economy. Actually, highway movements of military cargo directly benefit the civilian economy and the highway trust fund, since, pursuant to national transportation policy, most such movements are made by commercial carriers paying highway-user taxes. In addition, several States now provide 16 feet for their needs, and it is believed greater uniformity is clearly in the interest of interstate commerce and the national defense.

I realize the increase in cost, though small in comparison with the total cost of the system, presents serious problems. However, considering the importance and long life expectancy of the system, I believe it to be in the public interest to, as a minimum, increase the vertical clearance standard from 14 to 16 feet. If sufficient funds cannot be allocated to the construction of the system to the high uniform standards planned, I suggest that the more important routes be given first priority for completion within the 1972 time frame, leaving the remaining routes to be completed as rapidly as financing permits.

I wish to assure you of the continued cooperation of the Department of Defense, and I hope the views expressed above will assist you in reaching a decision.

Mr. Tallamy, when you were forwarded the copy of this letter, what was your interpretation of Secretary McGuire's letter?

Mr. TALLAMY. My interpretation was that the Department of Defense required, after review of this matter again, a 16-foot vertical clearance as a minimum national standard.

Mr. MAY. Did you consider this a recommendation of 16 feet instead of 17 feet?

Mr. TALLAMY. Yes; I did.

Mr. MAY. Mr. Chairman, may we make that December 21 letter exhibit 48?

Mr. SMITH. Without objection, it is so ordered.

Mr. MAY. We have already received in testimony the fact that following the letter from Secretary McGuire you promptly corre-

sponded with Mr. Johnson of the American Association of State Highway Officials on January 4, 1960, at that time asking if your interpretation of the AASHO action in October was correct to the effect that AASHO would approve standards up to 17 feet; is that correct?

Mr. TALLAMY. That is correct.

Mr. MAY. And Mr. Johnson did contact the various State highway departments and did receive their answers, and promptly notified you on January 8, 1960, that your interpretation was correct.

On that same day you corresponded with the Secretary of Commerce—on January 8, 1960—recommending that he approve the new 16-foot vertical clearance standard. We need not read this letter, Mr. Chairman.

May we make Mr. Tallamy's letter of January 8, 1960, exhibit 49?

Mr. SMITH. Without objection, it is so ordered.

(The document referred to was marked "Exhibit No. 49" and follows:)

EXHIBIT 49

BUREAU OF PUBLIC ROADS,
January 8, 1960.

Re Interstate System vertical clearance.

Hon. FREDERICK H. MUELLER,
Secretary of Commerce, through Hon. John J. Allen, Under Secretary, and B. D. Tallamy, Federal Highway Administrator:

On October 27, 1959, I recommended your approval of a change in the minimum vertical clearance standards to 17 feet for the National System of Interstate and Defense Highways as requested by the Department of Defense October 1 and as acted upon favorably by the AASHO October 10 and 11.

On December 21 the Department of Defense revised their request reducing their minimum vertical clearance requirement from 17 to 16 feet. On January 8 the AASHO agreed to the 16 feet Department of Defense requirement.

I therefore recommend your approval of the Department of Defense revised request and the AASHO action taken in October revised to 16 feet, effective immediately.

I am enclosing a suggested draft of a letter to the Secretary of Defense.

The Honorable the SECRETARY OF DEFENSE,
Washington, D.C.

DEAR MR. SECRETARY: On the basis of your letter of December 21, the Federal Highway Administrator informed the American Association of State Highway Officials of the revised Department of Defense requirement for only 16 feet minimum vertical clearance on the National System of Interstate and Defense Highways.

On January 8 the American Association of State Highway Officials agreed to this change. I therefore am approving 16 feet as the minimum vertical clearance, effective immediately.

I am taking such action with the understanding that in defining 16 feet as your presently foreseen requirement you have considered your needs for the duration of our program for completion of the Interstate System. As you know, the system is designed to meet the needs of highway traffic in the year 1975. Bridges are expected to remain serviceable for more than 50 years thereafter.

Sincerely yours,

——— ——— *Secretary of Commerce.*

Mr. MAY. That brings us up to January 8.

The next significant piece of correspondence comes about on January 25, 1960. This correspondence comes from Deputy Assistant Secretary of Defense James H. Douglas, and is directed to Mr. Mueller, Secretary of Commerce.

EXHIBIT 50

This refers to your letter of November 12, 1959, concerning vertical clearance standards for the National System of Interstate and Defense Highways, and subsequent replies thereto. After a personal review of the matter, I must reaffirm the position previously stated by Mr. McGuire in his letter to you on December 21, 1959.

The Department of Defense recommendation of 16 feet as the minimum vertical clearance standard is based on the considered judgment that the present 14-foot standard will not adequately meet the needs of the Nation during the 50-year anticipated life of the new highway system. The inadequacy of the present standard is reflected in the number of shipments being made that exceed 14 feet in height. Such shipments must be carefully routed to avoid restrictive areas. Obviously, the difficulties in successfully routing oversize shipments will materially increase if the projected highway system is completed with the 14-foot vertical clearance standard.

In recognizing the current problems and the existing upward trend in the number of outsize shipments, 30 percent of the States have already established a standard clearance of 16 feet or over for new construction, with 71 percent of the States specifying clearances of 15 feet or over. The recognition by the States of the need for higher clearances is clearly indicative of the need to seriously consider the matter with respect to the national highway system. Further, action at the national level would seem appropriate to standardize insofar as practicable, clearance criteria over the whole National Interstate Highway System.

Militarily, the higher clearance will insure greater flexibility in the use of our national highways to deploy and support current and future weapon systems. Many weapon systems that have not yet been visualized will be developed, employed, and replaced during the lifetime of the new highway system. Although the Atlas missile, in the current inventory, can be transported partially disassembled with 14 feet vertical clearance, the availability of 16 feet clearance would greatly facilitate its deployment and effective utilization.

It is recommended you give serious consideration to adopting 16 feet as the clearance standard for grade separation structures yet to be constructed on the National System of Interstate and Defense Highways. I recognize that your decision must be weighed against all aspects of its impact on industry, commerce, and Government. It is clear, however, that the acceptance of the 16 feet clearance will provide more flexibility for commerce and industry and will facilitate transportation support of the Department of Defense in both peace and war.

Mr. Tallamy, if Secretary McGuire on December 21 had recommended 16 feet, why then, over a month later, on January 25, did Mr. Douglas also write to the Secretary of Commerce reaffirming Secretary McGuire's recommendation?

Mr. TALLAMY. I believe the Secretary of Commerce requested the Department of Defense to look into the subject to be sure that they had contemplated the fact that the system would be designed for traffic existing in 1975, and wanted to be sure that everything was fully considered by the Department of Defense.

Mr. MAY. So that even after Secretary McGuire wrote to the Secretary of Commerce, additional action was taken?

Mr. TALLAMY. Yes. I believe that is correct.

Mr. MAY. To insure that 16 feet would be adequate?

Mr. TALLAMY. I believe that is correct.

Mr. MAY. Because we do notice that although Secretary McGuire's letter was dated December 21, that the standards were not changed at that time, until sometime later.

Mr. TALLAMY. That is right.

Mr. MAY. Mr. Chairman, may we make that January 25 letter exhibit 50?

Mr. SMITH. Without objection, it is so ordered.

Mr. MAY. Now, on January 27, Mr. Tallamy, you again wrote to the Secretary of Commerce and recommended that the 16-foot standard be approved. Is that true?

Mr. TALLAMY. That is correct.

Mr. MAY. On January 27, on the same day, the Secretary of Commerce forwarded a letter to Deputy Secretary Douglas accepting the recommendation of 16 feet.

Mr. TALLAMY. That is correct.

Mr. MAY. And on the same date, January 27, 1960, the Bureau of Public Roads instructional memorandum to the field was forwarded.

Mr. TALLAMY. That is correct.

Mr. MAY. So the new standard was fixed as of that date, January 27. Is that correct?

Mr. TALLAMY. That is correct.

Mr. MAY. Mr. Chairman, we asked the Bureau of Public Roads to furnish the staff with any instructions forwarded to the regional or division offices after the convention held in Boston in October. At that convention the members of the American Association of State Highway Officials had approved the proposition of raising the standards to 17 feet, although the official approval was not submitted until October 23, 1959.

Using the material forwarded to us by the Bureau of Public Roads, I would like to ask Mr. Constandy certain questions that he will take from that material, which is Bureau of Public Roads material. May we do that?

Mr. BLATNIK. Without objection, please proceed.

Mr. MAY. Mr. Constandy, what general instructions did the Bureau say they had issued to the regional or division offices after the AASHO convention in October of 1959?

Mr. CONSTANDY. The staff received a letter from Mr. F. C. Turner, Deputy Commissioner, on January 28, 1960, in which he stated the following, and I quote:

> Pending approval by the Secretary of Commerce, the State highway departments and the Bureau of Public Roads were faced with three possible alternatives. The States and the Bureau could (1) in anticipation of an early approval of increased minimum vertical clearance begin a changeover to the anticipated 17-foot standard and thereby lessen the subsequent cost of providing the increased clearance, (2) continue to design and construct on the basis of vertical clearance standards currently in effect, or (3) suspend all design work and approval of further projects until the Secretary of Commerce acts upon the proposed change.

Mr. MAY. What alternative did the Bureau select?

Mr. SCHERER. Pardon me. What was the date of this letter?

Mr. CONSTANDY. January 28, 1960, is the date of the letter to us informing us of the actions taken by the Bureau of Public Roads.

Mr. SCHERER. Directed to the staff?

Mr. CONSTANDY. Directing their regional and division offices. It is not the date of the directive, but when they transmitted it to us.

Mr. SCHERER. But this communication is directed to the staff of this committee in response to an inquiry. Is that right?

Mr. CONSTANDY. That is correct.

Mr. MAY. What alternative did the Bureau of Public Roads select?

Mr. CONSTANDY. Well, the three that they recommended. They differed as it was presented in each region. If you would like, I will go through the regions.

Mr. MAY. Does not the letter contain a statement to the effect that no general instructions were issued?

Mr. CONSTANDY. It continues:

Since the action by the State highway departments was in response to a request from the Department of Defense to meet requirements of "national defense, it is anticipated that the Secretary of Commerce would give early approval to the recommended change in the standards. Therefore, no general instructions were initially issued by the Washington office of Public Roads relative to the approval of clearances different from prior State practices."

It continues then:

However, teletype replies were made by the Washington office in response to two inquiries concerning specific questions on projects involving vertical clearances.

Mr. MAY. So, anticipating early approval by the Secretary of Defense, the Bureau issued no general instructions to the field?

Mr. CONSTANDY. That is correct.

Mr. SCHERER. Is that last letter going in evidence?

Mr. MAY. Yes. We will make all of this material as an exhibit after we have completed the contents.

What happened out in the various regions after the Boston convention? Were we furnished material regarding that situation?

Mr. CONSTANDY. Yes. The letter continued and summarized the actions in each of the regions, and included correspondence which reflects further the action in each of the regions.

Mr. MAY. Could you tell the committee the States covered by region 1 of the Bureau of Public Roads?

Mr. CONSTANDY. Yes. Region 1, which is located in Albany, N.Y., includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

Mr. SCHERER. Pardon me. This is another letter from Mr. Turner?

Mr. CONSTANDY. This is a continuation of the same letter.

Mr. SCHERER. From Mr. Turner?

Mr. CONSTANDY. That is correct.

Mr. SCHERER. Mr. Turner has been here ever since this hearing started. Is Mr. Turner here? Don't you think, Mr. Chairman, we should ask Mr. Turner about these matters, since he wrote the letters, rather than have a staff member summarize from the letters to give his impression of what the letters say?

Mr. CONSTANDY. No. It was not intended to be a summary or an impression, Mr. Scherer. We have the actual correspondence which I would read into the record.

Mr. MAY. Mr. Chairman, may I say we would ordinarily ask Mr. Tallamy to read this, but Mr. Tallamy has had an operation and it is awkward at the moment for him to use his eyes too much, so we thought we would help him by allowing Mr. Constandy to read this material.

Mr. SCHERER. But Mr. Turner has not had any operation.

Mr. MAY. We would be very happy if Mr. Turner would wish to carry on with this testimony.

Mr. SCHERER. I think he should testify and I think we should ask the man who wrote the letters. I object to counsel reading these answers summarizing the letters. Since Mr. Turner is here we should ask him the questions.

Mr. BLATNIK. Mr. Turner, on very short notice would you give us a hand in this particular phase of the testimony?

Mr. MAY. Mr. Constandy, you might remain available to help Mr. Turner in pointing out where he might find some of the material.

Mr. SCHERER. That he wrote?

Mr. MAY. That he wrote. Mr. Turner——

Mr. SCHERER. I always wanted an opportunity to cross examine Mr. Turner anyhow.

Mr. MAY. Mr. Turner, could you tell the committee what instructions were issued by the regional engineer of region 1?

Mr. SCHERER. Mr. Turner, as you go along and testify, if you have any explanations so that we can better understand the import of these various questions and your replies, I would appreciate it, if you would make the necessary explanations.

Mr. SCHWENGEL. Not only the import, but the reasons for this.

Mr. SCHERER. I mean that.

STATEMENT OF FRANCIS C. TURNER, DEPUTY COMMISSIONER AND CHIEF ENGINEER, BUREAU OF PUBLIC ROADS, DEPARTMENT OF COMMERCE

Mr. TURNER. In region 1, the regional engineer orally advised all of his division engineers that they should not require any change in the standards, but that they could approve the 17 feet of clearance if any State so requested.

Mr. SCHERER. Maybe this is in the record, but this instruction given by the regional director of the Bureau was during what period? Evidently that is clear in the record, but I don't remember it.

Mr. TURNER. This would have been the period between October 11, 1959, and January 27, 1960.

Mr. SCHERER. And that was after the American Association of State Highway Officials' convention, at which AASHO had approved the 17-foot clearance, but it had not become final because it had to go to the Secretary of Commerce for his approval.

Mr. TURNER. That is correct, Mr. Scherer.

Mr. SCHERER. That was a tentative approval of the 17-foot clearance that AASHO went along with.

Mr. TURNER. That is correct.

Mr. SCHERER. And then when it did get back to the Secretary of Commerce, some time after this date the Secretary of Commerce asked for a review by the Secretary of Defense. And after that review by the Secretary of Defense he said, no, 16 feet will suffice rather than 17 feet that had been previously recommended.

Mr. TURNER. That is right.

Mr. MAY. I think that is well for all of us to bear that in mind as we go through these regions. The AASHO submitted their official approval on October 23. Mr. Tallamy submitted it to the Secretary of Commerce on October 27. The Secretary of Commerce referred it to the Secretary of Defense on November 12. Finally, on December 21, Mr. McGuire sent his answer to the Secretary of Commerce, and eventually Secretary Douglas forwarded his letter on January 25. So we must keep those moves in mind as we hear what happened out in the regions.

In region 1 we will note that the instructions were that the division engineers would not require any States to increase the clearance but could approve a 17-foot clearance if the State so requested it.

Mr. Turner, what States are covered by region 2?

Mr. TURNER. Region 2 has headquarters at Hagerstown, Md., and it covers Delaware, Maryland, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia.

Mr. MAY. What general instructions were issued by the regional engineer in region 2?

Mr. TURNER. No general instructions were issued. The regional engineer advised caution in approving projects that involved increased clearance, and he did concur in the revision of further plans to provide increased clearances, which involved only three structures, however.

Mr. MUMMA. How many structures?

Mr. TURNER. Three. Only three.

Mr. MUMMA. I know one project that had more than three on it.

Mr. TURNER. That may not have been requested to have a change made.

Mr. MUMMA. They changed them February 12 in Arizona.

Mr. SCHERER. That is after the date we are talking about.

Mr. MUMMA. Yes, I know.

Mr. CLARK. For the record, Mr. Chairman, I wonder if Mr. Turner would give us the names of the regional engineers in regions 1 and 2?

Mr. TURNER. The regional engineer in region 1 is John Swanson, with headquarters at Albany.

Mr. SCHERER. Is he a career employee?

Mr. TURNER. He is.

Mr. SCHERER. How long has he been with the Department?

Mr. TURNER. I don't know exactly. Twenty-five years, I am sure.

Mr. SCHERER. That is enough. Without repeating the questions, are all these engineers or regional directors, Mr. Turner, career employees of the Government?

Mr. TURNER. Yes, sir. Without exception.

Mr. SCHERER. Civil Service status?

Mr. TURNER. Yes, sir.

Mr. SCHERER. And they have all been in the Government employ from 10 to 15 to 20 years?

Mr. TURNER. All of our regional engineers have been in the Bureau for more than 20 years, I am sure. The regional engineer in Hagerstown, Md., is August Shofer.

Mr. SCHERER. You yourself are a career employee, and you have been with the Bureau for how many years?

Mr. JONES. Off the record.

Mr. SCHERER. No.

Mr. TURNER. Since June 11, 1929.

Mr. MAY. Mr. Turner, what States have jurisdiction in region 3?

Mr. TURNER. Region 3 has headquarters at Atlanta, Ga., and includes Alabama, Florida, Georgia, Mississippi, North Carolina and South Carolina, and Tennessee. The regional engineer is Rex S. Anderson, who I know has been in the Bureau since 1930.

Mr. MAY. What general instructions were issued by the regional engineer of region 3?

Mr. TURNER. Similar to the others. No general instructions were issued. However, there was a memorandum from Mr. Anderson to the division engineer in Alabama, Mr. Scott, dated October 23. This memorandum clarified and modified, in accordance with paragraph 3 below of the letter which you have, and it referred, I believe, only to one specific project. There was also a teletype from Mr. Anderson to the division engineer, Mr. Shippey in South Carolina, which was in reply to a teletype from Mr. Shippey under date of December 28, which is also attached to the material which you have.

Oral instructions are reported to have been issued by Mr. Anderson immediately following the Boston meeting. In each State there should be an examination and appraisal of the status of the work on a project-by-project basis for structures that were already under contract, and for those that were in the design stage where revisions could be made that would entail no major cost or major redesign without delaying the construction work, those changes were to be made to provide higher clearances up to 17 feet. On structures not yet designed, or that were in the very early stages of design, the vertical clearance of 17 feet would be applied.

Mr. MAY. Here is a situation wherein the instructions differed from region 1. In region 1 the instructions were that they should not require any State to increase the vertical clearance on bridges, and here in region 3, on structures not yet designed or in the very early stages of design, the vertical clearance of 17 feet should be used.

Mr. SCHERER. Do you have an explanation for that, Mr. Turner?

Mr. TURNER. I believe it is a difference in timing. We are covering the whole period here from early October until January 27, and during that approximately 4-month period there were a number of changes made because of the situation as it went along. I believe that the general instruction that was referred to in region 1 was an early instruction which may have been, and I am sure was, altered in individual cases at a later time during the 4-month interval.

Mr. MAY. Do we have some situations wherein during the same period different regional engineers issued different instructions to their divisions?

Mr. TURNER. I am sure that is right on the basis of individual projects and individual questions that were brought up to them.

Mr. JONES. May I ask a question at this point, Mr. Chairman?

Was that done, Mr. Turner, to make those structures compatible with existing structures, or what was the justification?

Mr. TURNER. You must remember that this period of October to January is the period during which very little construction is actually underway, particularly in the northern States that would be covered by region 1 at Albany. Region 3 out of Atlanta, which is the region in which your State, Mr. Jones, is located—in that region there would have been some construction underway, but not nearly as much as would have occurred at some other period of the year. What the regional engineers——

Mr. SCHERER. Pardon me for just a minute. These differences, or what appear to be these differences in instructions, did not affect construction. These were plans. None of these structures, according to the testimony of Mr. Erickson, had been built as yet.

Mr. JONES. That is what he is trying to explain.

Mr. SCHERER. He was talking about construction and there was not much construction going on.

Mr. TURNER. Mr. Scherer, there were a few projects actually underway. There naturally would be at any time. The general approach that the Bureau was using—and all of the regional engineers and State people were following—was to revise wherever it could be done at reasonable cost, and attain the higher clearance that we presumed would shortly be approved officially.

In the cases of projects that were on the drafting boards or in design status, revisions were made in some cases, and in others they were not made.

In virtually all of those cases very little money was involved in the engineering that would have been required to make changes. In the case of projects that were actually under construction, if the project was in such a stage of construction that a decision had to be made immediately as to whether or not to retain the 14- or 14½- or 15-foot clearance that may have been designed into it, or to go to the 17-foot clearance, I believe in nearly every case, and certainly in all of those that came to our attention in the Washington office, the change was made to the higher clearance on the theory that we assumed that the clearance would be raised and we would get an official order in due time; and since it was less expensive to make the change during construction than after construction had been completed, we naturally gambled on that side and made those changes; and that, I am sure, is the general principle that was followed throughout the Bureau in all of the States.

Mr. SCHERER. Do I understand from your testimony then that there was only a very moderate amount of inconvenience and only a small loss of funds due to this indecision during these 2 months?

Mr. TURNER. I am quite sure that that is an appropriate conclusion, Mr. Scherer.

Mr. JONES. In other words, it was a question of the arithmetic of the proposal, rather than trying to make standardized or uniform the existing structures?

Mr. TURNER. Yes. On an individual-project basis. You must remember this: In considering the instructions that had to be issued during this period, the Bureau had no statutory authority to order an increase in standards at this time. We could only order an increase when and if it was officially adopted by the Secretary of Commerce. Had we ordered the States to increase the clearance immediately to 17 feet, or 16 feet, or anything else other than 14 feet——

Mr. JONES. You just held those projects in abeyance rather than programing them?

Mr. TURNER. If the project had not reached the point where it was under construction, naturally most of those were held in abeyance. But going voluntarily to 16 or 17 feet is completely legal; 17 feet is within the standards that have previously been approved, the same as 14 feet, so that you could go to 16 feet, or 17 feet, if the State so desired, and we had the authority to concur in that; but we could not order that all structures immediately be redesigned to 17 feet.

That is the reason why we did not issue any such order to that effect.

Mr. WRIGHT. Mr. Chairman, may I ask the witness a question?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Frank—Mr. Chairman, I will call Mr. Turner "Frank" because he is a constituent of mine, so go easy on the cross examination.

Mr. JONES. I hope this does not get into a mutual admiration society.

Mr. WRIGHT. I may be getting ahead of the story, Frank, but you testified just now that generally it is the policy of the Bureau to gamble in favor of the relatively higher clearance if a State has requested the privilege to construct at a relatively higher level. The other day someone testified about an occurrence, as I recall it, in the State of Montana, in which they had in mind, I believe, the construction of 10 new bridges or overpasses where previously such structures had been built in that State at the 15-foot level. Following the American Association of State Highway Officials' meeting of October, the State of Montana, I believe it was testified, requested permission to build these new overpasses at a 17-foot standard. Then I believe it was testified that they had designed these new overpasses to a 17-foot standard, but that the officials in that State were advised by their regional directors of the Bureau that this would not be acceptable, and to go back to their 15-foot standard.

This would seem to be inconsistent with the general policy that you have just expressed, and I am wondering if there was any particular reason for that.

Mr. TURNER. First off, Mr. Wright, the 10 structures you referred to in the first part of your statement as having been built—none of those structures were further than the drafting board, if that far, actually.

Mr. WRIGHT. They had been planned, I meant, instead of built.

Mr. TURNER. That I am sure is what you had in mind. Some of those were changed back and forth in the design instructions—yes—and to that extent there was inconsistency. I don't know how it could have been avoided. I am sure there is no appreciable, if any, loss of public moneys in so doing, because it merely was a case of being unable to know precisely what instructions to give to the draftsman and the designer on the drafting board.

I believe that the instances——

Mr. JONES. Are you saying that you did not deal with the States uniformly?

Mr. TURNER. Sir?

Mr. JONES. Are you saying that you did not deal with the States uniformly in the requirements of height during that period?

Mr. TURNER. We had the general instruction and the general verbal instruction to our people that I have explained earlier, Mr. Jones. We were not in a position to give any official instructions to our people. First, we didn't know what to give to them. We had no authority to require any change on the 14-foot standard that had been and was then in effect.

Mr. JONES. And you are speaking of the period from October through January?

Mr. TURNER. From October 11, 1959, which was the date of consideration of this matter by the American Association of State Highway Officials in Boston, to January 27, 1960, the date we had official action on this requested change.

Mr. JONES. Any further questions, Mr. Wright?

Mr. WRIGHT. I was a little curious about that situation. According to a report I heard, a bridge with a 15-foot overpass was recently struck by a truck with an oversized load out there, and this incurred some $10,000 worth of damage. Are you familiar with that?

Mr. TURNER. No, sir, I am not familiar with the particular one you have in mind, Mr. Wright, but I would point out that any load that was 15 feet high is an illegal load to start with. He ought to expect to get his head bumped somewhere in moving that kind of a load.

Mr. WRIGHT. I am not thinking of the damage to the truck, but the damage to the overpass.

Mr. TURNER. I am concerned about that, too.

Mr. MUMMA. Mr. Wright.

Mr. WRIGHT. Yes.

Mr. MUMMA. Was that a military or a civilian load?

Mr. WRIGHT. I do not have that information, Mr. Mumma, and I was just trying to find out what I could about it.

Mr. MUMMA. I know from experience that civilians take chances sometimes that the military won't.

Mr. SCHERER. Which one is this you are referring to? The one we had a picture of here?

Mr. WRIGHT. No. I am thinking in terms of a report that I have heard to the effect that recently one of the 15-foot overpasses in Montana was struck, resulting in damage of approximately $10,000 to the structure itself. I thought perhaps Mr. Turner might have information about that but he does not.

Mr. SCHERER. I am glad you mentioned that before we proceed any further. I want you to understand that I think Frank Turner is a terrific highway engineer and the Government of the United States is mighty lucky to have a man in its service like Frank Turner, in spite of the fact that he is a good friend of yours.

Mr. WRIGHT. I will not argue with you about that.

Mr. JONES. Mr. Chairman, I wonder if Mr. Turner will express his opinion as to what he thinks about us now.

Mr. SCHERER. You can take the fifth on that one.

Mr. BLATNIK. Is the gentleman from Texas through?

Mr. WRIGHT. I have yielded to the gentleman from Ohio.

Mr. SCHERER. Mr. Wright mentioned the damage to this particular truck. I was handed a photostatic copy of an article from the February 22 issue of Newsweek, this week's issue. It is headed "Billions for Defense Roads—But Ouch! Low Bridge!"

Some of the things it says in here just leave a wrong impression with the public.

It is said this system of 40,000 miles cost $65 billion. Now, to start off with, the original cost was $27 billion. I realize it has gone to $39 billion, but I think everybody knows that is a mistake, that the public is misled on the cost.

Then it says that these roads were built, and it implies solely for the national defense. While they are for the national defense, they are primarily interstate highways to handle the day-to-day traffic of this Nation.

Then the article goes on to say that:

> On one occasion, the subcommittee was told, a "military object" of great size had suffered $20,000 damage in an overpass squeeze. The blunder, according to the testimony, was strictly bureaucratic.

Now I think that is just a little unfortunate that we have this type of reporting, because I remember we had the picture here that was used to illustrate what happens when a truck hits a low overpass. However, that particular overpass that was shown, in the photo that I had before me, was not on the Interstate System and had not been built since 1956. It was an old overpass. This reporting indicates that this incident happened on the Interstate System on an overpass built since 1956.

Mr. WRIGHT. Of course, I cannot comment on that Newsweek article, because I have not seen it, but it is possible that the writers may have gotten an advance copy of the Bragdon report. Do you reckon that might be?

Mr. SCHERER. I want to talk about that, too, if the chairman will let me.

Mr. BLATNIK. Mr. May. Please let us go on.

Mr. MAY. Since the discussion has swung to Montana, Mr. Turner, you have there a copy of a letter dated December 4, 1959?

Mr. TURNER. Yes, sir; I have it in front of me.

Mr. MAY. Would you identify the letter and read it, please?

Mr. TURNER. The letter is dated December 4 and it is from Fred Cornell, Jr., State highway engineer, and is signed by Albert W. Jones, bridge engineer. It is addressed to the Bureau of Public Roads. It lists in there 8 interstate projects involving 10 structures in varying stages of design.

All right. We will read the whole thing then.

We wish to acknowledge receipt of your letter of November 30, 1959, relative to the 17-foot vertical clearance of structures over the Interstate System and confirming our discussion of that date.

In reply thereto and in further confirmation of our discussion of November 30, we wish to advise that in compliance with instructions issued at AASHO on bridge committee meeting in Boston on Thursday, October 15, and as reaffirmed by members of your organization upon my return to Helena, the contract plans for all structures over the Interstate System not then under contract were revised from the previously prescribed clearance of 15 feet to the new 17-foot vertical clearance as follows:

Do you want to list these?

Mr. MAY. We just mentioned those eight projects.

Mr. TURNER. Those are the 8 interstate projects involving 10 structures I referred to. Continuing:

Comparing quantities on the aforementioned 10 structures, it is estimated that it will cost an average of $2,047 more per structure to provide for a 17-foot vertical clearance than it would to provide for a 15-foot vertical clearance. It is also estimated that it will cost an average of $650 per structure to revise plans back to the 15-foot vertical clearance for a net saving of only $1,397 per structure for providing a vertical clearance of 15 feet instead of the 17 as now provided by the contract plans.

At the present time we have plans for eight other structures over the Interstate System in various stages of development from 25 to 75 percent complete and all are being prepared on the basis of a 17-foot vertical clearance.

To date we have only the one completed structure over the interstate that has a vertical clearance of less than 17 feet. It is located on Montana No. 8 over the Interstate approximately 1.6 miles southerly of Crow Agency, Mont., construction of Federal aid project IN90-9(7), 588 units, and completed on August 21, 1958, with a finished vertical clearance of 15 feet 3½ inches. On October 23, 1959, an overheight load moving south on Interstate Highway No. 90 struck and damaged five of the seven girders of span No. 2 causing damage estimated to exceed $10,000.

In view of the circumstance enumerated above, we respectfully request permission to continue the use of the higher vertical clearance until such time as a definite vertical clearance policy has been established, as it is impossible to repair structure plans unless all requirements are known.

Mr. MAY. Now here is a situation where on December 4, 1959, the State of Montana said that it had under consideration some 8 or 10 structures and pointed out that the plans had been designed for 17 feet and it pointed out that if you went back and revised plans, it would cause $650 to revise it back to 15 feet, that is per structure, and they wanted to build at 17 feet. Now what did the Bureau instruct them to do?

Mr. TURNER. On January 5, Mr. French, who is our regional engineer in charge of region 8, headquarters in Portland, Oreg., wrote to Mr. W. B. Huffine, our division engineer in charge of work in Montana. He wrote as follows:

Reference is made to our telephone conversation today regarding the two interchanges ready for advertising at Miles City. Since the policy of the Bureau is to approve vertical clearances for interstate structures in accordance with previously established interstate standards, we are not in a position to approve the 17 foot desired by Montana. This is in accordance with Bureau practices being followed in the rest of the country. Apparently, this matter has been considered in other States and the decision reached to continue approvals as in the past without regard to the discussions of the AASHO meeting in Boston. Our position remains as stated in our December 8 memorandum to you.

In view of the situation in Montana, it is believed advisable that you reaffirm this position in writing in order to avoid, if possible, the present situation wherein the State has structures designed for 17-foot clearance and the Bureau not being in a position to authorize advertising.

Mr. MAY. Do you agree with the decision made by the regional engineer?

Mr. TURNER. Yes, sir.

Mr. MAY. Could you explain that position?

Mr. TURNER. May I first point out that the State of Montana has on its own books a law which says that the maximum legal height of any vehicle is 13 feet, 6 inches.

Therefore, any load which struck any overhead construction that was 15 feet or more in height, certainly was an illegal movement to start with and I don't believe that the State highway department or the Bureau should be charged with any negligence with the writing of a design on that type on which an illegal load might have damaged itself on created damage to the structure.

Mr. MAY. I was thinking more of the situation where the State of Montana, having normally built at 15 feet, had redesigned the structures to a height of 17 feet at a cost per structure of $2,047.

What Montana was saying in their letter is that if you make us revise our plans backward to 15 feet, it will cost us $650 a set of plans which will result in a savings of only $1,397 and we will then have a 15-foot structure instead of 17-foot structure, so please let us build at 17 feet.

Then the Bureau in turn said: "No, we cannot approve 17 feet; you will have to build at 15 feet."

Mr. TURNER. That is right. The action at Boston taken by the AASHO committee was not an official action. It was a part of the steps that were necessary for official action, but in and of itself it was not the completed final action in accord with the statute for a change

from 14 feet previously approved standard to any other standard, 17 or 16 feet.

Therefore, the Bureau had no official authority to require a change. The reason that we did not want to approve a higher standard, the higher clearances that involved higher costs at that particular time, is simply a matter of internal administration. We have to have some uniformity which is required by the statute in the application of these standards in all States on it.

On the Interstate System, as you know, funds are apportioned to the State from the basis of estimates of cost, which are again based on approved standards and which the law says that the Secretary of Commerce shall apply uniformly in all States.

If we allowed a State to arbitrarily decide that it wanted to build to 24-foot standards or any other standards and that involved additional costs, how would we be following the law and how would we explain to other States the excessively high costs that might be involved in the higher standards?

Now this matter of whether we let them go ahead at 17 feet or required them to come back to 14 or 15 feet, we necessarily had to during this October to January interim, we had to take some action to keep uniformity as nearly as we could in all States. It was a difficult job and we did the best we could under the circumstances.

Mr. MAY. I think that is the point, Mr. Turner. In Montana, the State wanted to build at 17 and the Bureau had to say no, you have to build back to 15.

Mr. SCHERER. Pardon me just a minute. Was this bridge under construction at the time?

Mr. TURNER. None of these are under construction; no, sir.

Mr. SCHERER. The one we are talking about has not been built as yet?

Mr. TURNER. This one that has been hit.

Mr. SCHERER. The one you are just talking about?

Mr. TURNER. We are talking about 10.

Mr. SCHERER. The one counsel is questioning about where you issued an order that you had to change your plans?

Mr. TURNER. There are 10 structures involved there Mr. Scherer.

Mr. SCHERER. How many of those have been built?

Mr. TURNER. None.

Mr. SCHERER. None of these have been built as yet?

Mr. TURNER. No, sir.

Mr. SCHERER. We are talking about a moot question then; no loss except perhaps a change in plans.

Mr. MAY. I might point out, Mr. Turner, that this State highway man in Montana initially started with Bureau approval. As you note in that letter, he says: "With your approval."

And that brings us to the point that you say the Bureau could not officially allow the State to build at the greater 17-foot clearance, yet we have already heard that region 1 said that the division engineers could approve if the State requested it, we have region 3 saying on structures not yet designed—in the very early stages of design—vertical clearance of 17 feet should be used.

So they were telling the States in October and November, early November at least, that some of the regional engineers were saying,

"Use the 17-foot standard." So those plans were being designed, 17 feet was being used, and as Montana pointed out, it does cost money to redesign structures.

Mr. TURNER. It also cost money, Mr. May, to actually construct them too, to the higher standards.

Mr. SORENSEN. The only loss in those 10 structures in Mont[illegible]

Mr. MAY. What instructions were given by that regional engineer?

Mr. TURNER. There was a memorandum from the regional engineer, Mr. Swick, to all division engineers dated October 22, in which he suggested to them that they make the change to 17 feet. This was issued after Mr. Swick's return from the Boston meeting. A memo

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Mr. TURNER. It also cost money, Mr. May, to actually construct them too, to the higher standards.

Mr. SCHERER. The only loss in these 10 structures in Montana, as I understand it, was some engineering costs in redesigning these structures from 14 feet to 17 feet, or from 17 feet back to 16 feet; would that be right?

Mr. TURNER. I doubt if there is even that much, Mr. Scherer, because I think that most of these are calculations in a letter, I don't believe that those structures were actually redesigned and the two times that would be required to make the costs that you are talking about.

Mr. MAY. Pardon me, Mr. Turner, I think he does say the designs are complete.

Mr. TURNER. The designs were complete, but what he is talking about is changing them again to the lower standard and then back again to 16 feet.

Mr. MAY. Now if they did not, and we do not know at the moment, if they did not revise back to 15, they will not have to revise back to 16.

Mr. TURNER. Yes, sir.

Mr. MAY. Could you tell us——

Mr. SCHERER. Pardon me. How much money is involved in that, approximately?

Mr. TURNER. I doubt if there is any money involved, Mr. Scherer.

Mr. SCHERER. No loss at all. I would think there would be a little loss.

Mr. TURNER. There might be some; yes, sir. But I don't know that there is any actually lost to the fund either way.

Mr. MAY. Was the State highway man in error when he said that it would cost $650 per set of plans to revise them back to 15 feet?

Mr. TURNER. That is probably a reasonable figure, but I don't know that he actually revised the plans.

Mr. MAY. If he now has to revise back to 16 feet, there would be some cost to redesign?

Mr. TURNER. Yes, sir, there would be some costs.

Mr. MAY. What States are covered by region 4, Mr. Turner?

Mr. TURNER. Region 4 has headquarters at Chicago and consists of Michigan, Illinois, Indiana, Wisconsin, and Kentucky.

Mr. MAY. What instructions were issued by the regional engineer of region 4?

Mr. TURNER. We have only two documents, one is a memorandum from Mr. Harrison to Division Engineer McDougall, who is our regional engineer in Michigan, dated December 24, 1959, which is attached to your letter. It says:

> No general directive was issued by the regional engineer. However, in discussions with the division engineer, he advised they had no authority to approve the increased clearance and in any case for any material increase in costs that would be involved.

Mr. MAY. What States are covered by region 5?

Mr. TURNER. Region 5 has headquarters at Kansas City, and includes North and South Dakota, Iowa, Kansas, Minnesota, Missouri, and Nebraska.

Mr. MAY. What instructions were given by that regional engineer?

Mr. TURNER. There was a memorandum from the regional engineer, Mr. Swick, to all division engineers dated October 22, in which he suggested to them that they make the change to 17 feet. This was issued after Mr. Swick's return from the Boston meeting. A memorandum was only suggestive and it did not require the change be made.

Mr. MAY. This was at a time when the Bureau could not approve the increased height because this is probably looking forward to the final adoption of the new standard and subsequent ability to approve the plans, is that true?

Mr. TURNER. This obviously was in anticipation that the 17-foot clearance would ultimately be adopted.

Mr. MAY. That was October 22?

Mr. TURNER. October 22; yes, sir.

Mr. MAY. What happened about a month later?

Mr. TURNER. That previous memorandum in effect was withdrawn.

Mr. MAY. What were the new instructions?

Mr. TURNER. I will read from it. It is the easiest way. This is dated November 24, again from regional engineer to division engineers:

> During a trip to Washington last week it was learned that the request for a revision in standards has been received by the Public Roads from AASHO and has been transmitted to the Secretary of Commerce for his consideration. These moves were in accordance with the discussions at Boston. However, the revision has run into administrative problems and some time may elapse before a final decision is reached. The Secretary of Commerce now has asked the Department of Defense for its position on bearing the increment of additional cost and it is understood that the Bureau of the Budget also is involved in the discussions. It is possible that several weeks may elapse before a final approval or rejection is given to the revision in the standards.
>
> Region 5 took a more positive position concerning the 17-foot clearances than did the other regions. While this is all to the good, if the revision is approved within the next few weeks, it will be most awkward if approval is not given.
>
> Accordingly, will you revise the position which you have taken as a result of our memorandum of October 22 to the extent of approving either 17-foot clearances or former standard clearances which are proposed by the highway departments? While we still feel that the 17-foot clearance is most desirable, we are in no position at this time to insist that it be obtained. This same general policy will apply to revision and designs now complete or on projects under construction. No effort should be made to revise decisions already reached unless the highday department protests them. In the event of a protest, you should withdraw from your position and permit designs or construction to proceed without regard to the increased clearances.

Mr. MAY. So that correspondence on November 24, corrected the previous correspondence of October 22. What happened on December 11?

Mr. TURNER. Further memorandum to the division engineers from Regional Engineer Swick says:

> Reference is made to our memorandums dated October 22 and November 24, 1959, relative to the adoption of a 17-foot vertical clearance requirement for structures on the Interstate System.
>
> Due to the uncertainty which has developed in this situation Public Roads is not in a position to approve the use of 17-foot clearances at this time.
>
> It is, therefore, requested that you disregard the two memorandums designated in paragraph 1 of this communication and that you base your approval upon the criteria which had previously been in effect.
>
> It is unfortunate that some misunderstandings have occurred in this situation but the matter is not sufficiently resolved to permit our taking any other position at this time.

It is suggested that you discuss verbally this matter with the State at your earliest convenience.

Mr. MAY. We might point out the lack of uniformity, because in the correspondence of November 24, 1959, that regional engineer pointed out that region 5 took a more positive position concerning 17-foot clearances than did other regions. What States are covered by region 6?

Mr. TURNER. Region 6 has headquarters in Fort Worth, Tex., and takes in Arkansas, Louisiana, Oklahoma, and Texas. Region engineer is A. C. Taylor, who has been with us since 1924.

Mr. CRAMER. Will the counsel yield?

Mr. BLATNIK. Mr. Cramer?

Mr. CRAMER. Will the counsel mind explaining to me on this side what the objective is of these questions?

We, of course, on this side have not had an opportunity to see the memorandums that are being read from or discuss with counsel the points he is attempting to bring out here, and I think it would be helpful if he would advise what he is attempting to show by these different regions, what happened between October and January. Why is it significant and what are we trying to show?

Mr. CLARK. Will you yield to me?

Mr. CRAMER. I would like counsel to answer the question.

Mr. CLARK. I am not completely familiar with this either, but I can certainly see why the questions are being asked because this is supposed to be a uniform law or rules dealing with the different States and I can see by the letters that have already been written back and forth, that there is no uniformity at all. One is 14, one is 13–9, one is 15, one is 17, and I think that is what the counsel is trying to bring out. Maybe I am wrong.

Mr. MAY. Congressman, I think that answers it. It may be that we can clearly establish when we finish here that uniformity did not exist in the field.

Mr. CRAMER. As I understand, his testimony is to the effect that during this period there was no final decision made as to what above 14 feet would be required during this period. In other words, a final decision hadn't been made by the Department of Commerce whether it would be 16 or 17 feet or anything officially in excess of 14.

They had been given to believe that there was going to be something in excess of 14 but, as I understand his testimony, he says, as far as I know correctly, the only authority they had was to require a minimum of 14.

Now if a State asked for 16 or 17 and in some instances, as I understand it, they felt they had discretion to permit it but they did not have authority to require 17 feet during this period of October 22 to January until the Department made a final decision. Therefore, what is the point of this? Obviously they were in a state of flux, but as he said, there hasn't been any substantial loss involved, so what are we trying to prove?

Mr. MAY. We might bear in mind, Congressman, that it has been established that there were no written definite instructions forthcoming from the Bureau of Public Roads to the regional and division offices after the October convention and we have already heard that some regional offices gave instructions to the field to go ahead and insisted that

the new structures be designed at 17 feet, whereas other regional engineers took other steps. We show eventually here some of the results of this action.

Mr. SCHERER. I understand the purpose now, but before we go any further maybe we can answer your question. During this period, Mr. Turner, between October and January, while you were waiting for this final clearance that we have been talking about, final height clearance, can you or anyone else tell us how many structures, if any, were affected insofar as actual construction was concerned, in the entire United States in all these regions? Do you know? Isn't that the point? Was there any loss other than maybe a few dollars on engineering fees?

Mr. WRIGHT. Will the gentleman yield to me?

Mr. SCHERER. He is trying to give me an answer.

Mr. TURNER. One hundred and thirty-six structures were authorized during that period for new construction, but——

Mr. SCHERER. You know how many were authorized, but were they started? What I think we ought to know is what was the loss due to this indecision, if that is what we are trying to find. I don't think it is material, but has there actually been any loss other than engineering, any material loss other than some costs for changing plans back and forth?

Mr. TURNER. Very little monetary loss, Mr. Scherer.

Mr. WRIGHT. Mr. Chairman.

Mr. BLATNIK. Mr. Wright.

Mr. CRAMER. Could you provide that information to the committee, what actual construction costs resulted, or losses?

Mr. TURNER. I would have to get them on an individual basis, Mr. Scherer. I think it is a general conclusion——

Mr. SCHERER. Are you trying to tell us it is mostly in planning and changing estimates and changing drawings?

Mr. TURNER. Yes, sir. As I tried to explain earlier, any individual project that was at such a stage in its construction life that a decision had to be made immediately as to whether to move from 14 to 16 or 17 feet, I believe that in every one of those cases, the plans for construction arrangements were made to make it 16 or 17 feet, so those structures will not have to be reconstructed.

Mr. WRIGHT. Mr. Chairman?

Mr. BLATNIK. The thing that bothers me, after 3 years of uncertain decision primarily within the Department of Defense, we finally come out with a decision, the Administrator accepts that as a firm, sound judgment, judgment based on firm sound facts, and submits it to the States and it is promptly accepted in complete and good faith and unconditional faith and they know the Administrator is in agreement with the figure, and you all go home knowing the figure will now be submitted to the Secretary of Commerce.

There is no indication whatsoever there may be a reversal. It is only a foot difference between 16 and 17, so they tell me there cannot be a loss to a program that has been bogged down for all of the last half of 1959, the whole system with the State departments geared to be operating, to be producing and the contractor ready to go into operation, the whole gigantic combination of effort and materiel and personnel are ready to move ahead and they still have uncertainty which

has now percolated down or sifted down, or filtered down from the Federal level down through all the regional offices and to every one of the 48 district offices and we have great disparity on what they can or cannot do, or may do. You say this is efficiency?

Mr. SCHERER. I realize that has been your position and what I am trying to do through these hearings, I am trying to find if there is any evidence to support this great loss you are talking about?

Mr. BLATNIK. If you are going to use evidence here on the small number of structures affected, it may prove one thing, but it proves to me this whole program has ground to almost a standstill.

Mr. SCHERER. Well, it is at a standstill chiefly because there is not enough money in the trust fund.

Mr. BLATNIK. What I want to find out is what was going on in the minds of those who had authority to make determinations.

Mr. CRAMER. As I gather the evidence so far from Mr. Turner, that in these different regions, when a request was made so far as holding up on the program was concerned, they went ahead and made a decision based upon the best available information, and where the States requested it, in many instances, they went ahead with 16 or 17 feet, depending on what the State asked for, as a matter not only of present but past policy.

When they asked above 14 feet, the State requested it; that is a matter of State policy. I don't see where there has been a great standstill in the program resulting from an indecision on a 1-foot clearance on the bridges. I don't see where there is any 6 months' loss and I don't see where there is any known loss.

Mr. BLATNIK. Region 6 and region 7 show the disparity continues. Letters have already been read earlier where some regions in October were told to proceed, if they requested 17 feet. Toward the latter part of November there is a holdup, start, stop, start, stop. May we proceed with region 6?

Mr. MAY. Mr. Chairman, I think we might also consider one more point, that we cannot always look at this thing in terms of money.

Do you have available the letter of January 13, 1960, from the division engineer in Wisconsin to Commissioner Armstrong?

Perhaps if you read that letter, it will help us in our thinking with respect to this whole situation?

Mr. TURNER. Do you want me to read this?

Mr. MAY. Would you identify that letter and read it, Mr. Turner?

Mr. TURNER. This is an internal memorandum dated January 13, 1960, from R. H. Paddock, division engineer, Madison, Wis., to Mr. Armstrong, Commissioner of Public Roads, Washington, D.C.

It is as follows:

Mr. R. H. Harrison's memorandum of January 8 conveyed a request from Mr. A. G. Siegle of the Office of Operations for certain data relating to the possible effects of a requirement for 17 feet of vertical clearance on Interstate System structures. The questions asked are indicated below with answers reflecting the situation in Wisconsin:

(1) What problems have been posed since the AASHO meeting in Boston as a consequence of the 17-foot resolution?

As a result of the possible requirement of a greater vertical clearance than provided in the past, structure design work on the Interstate System, whether performed by the State or by consultants, has been virtually suspended. Initially it was believed that this period of suspension would be of short duration involving relatively little hardship. As time has passed, however, without a

solution to this problem, it has been necessary for the State to reschedule certain structural work which had been planned for lettings in the first half of 1960. Work has, of course, proceeded on the Interstate System structures which are designed to pass over the local road systems, but such structures represent a relatively small proportion of the total.

(2) How has the matter been handled in each State? Did they issue any directives or orders? If so, get copies of these and any other correspondence readily available and pertinent to this matter.

The State initially gave verbal instructions to their district engineers and consultants to suspend design work involving Interstate System structures. As time passed, without any decision as to this design element, the State issued a directive to their district engineers dated December 22, 1959, with the subject heading "Structure Vertical Clearances, Interstate System." A copy of that directive is attached. You will note that the directive rigidly restricts engineering work on the Interstate System pending a decision as to vertical clearance requirements.

(3) In particular, what did your office do? Did we put anything in writing? If so, furnish copies.

Shortly after the Boston meeting of AASHO this office informally discussed the subject of vertical clearances with the State's design and bridge engineers. As both of these individuals were present at the Boston meeting, they were already fully informed of the possible requirements for greater vertical structure clearances than heretofore provided.

On December 22, the State submitted a request to this office for a decision as to the possible acceptance by the Bureau of a P.S. & E. for project 1894–7(6)305 relating to the West Cleveland Avenue structure on the West Expressway in Milwaukee County. This structure had been designed for a vertical clearance of 14 feet 6 inches and the State requested a decision as to whether or not the project would be acceptable on the basis of that design. Copies of that letter and our reply of December 28 are attached.

You will note that we suggested that design work on structures over interstate highways be suspended until the clearance question had been resolved. The State, of course, had already effected a suspension of such design work under their December 22 memorandum to their district engineers, to which reference has already been made.

(4) What has been the effect of the (illegible)?

(*a*) In terms of delays or man-hours lost?

(*b*) In terms of work done over?

(*c*) What about the consultants?

(*a*) The lack of definite information regarding required vertical clearances at structures will materially delay the Interstate System program in Wisconsin. The Milwaukee County Expressway Commission has recently indicated that a month's loss of time now in the design of certain structures on the expressway system may result in the loss of the entire construction season in some instances. Similar effects are contemplated on the rural segments of the Interstate System. It is not reasonably possible to translate such delays into man-hours of labor.

(*b*) Today, very little work has been done over as a result of revised vertical clearances requirements. In general, it has not been considered desirable to revise existing structure designs until such time as a definite ruling has been received as to the exact clearance requirements.

(*c*) Design work which is being performed by consultants has also been suspended. Since a major portion of the structural design on the Interstate System is in the hands of consulting firms, we anticipate that there will be a number of requests for material increases in compensation. This is particularly true in instances where the preliminary design has been approved by the State and the Bureau prior to notice of a possible revision in vertical clearance requirements. In many such cases the design work is virtually complete and the proposed revisions will require a considerable number of man-hours of labor.

(5) Has any work been let at 17 feet on the basis of anticipated approval of increased clearance requirements?

The letting of December 10 included three structures on project 190–2(22)93 in Sauk County, where vertical clearances slightly in excess of 17 feet were provided. It was possible in these instances to revise the original designs to provide a minimum of 17 feet of clearance without affecting any increases in span lengths and with a minimum of revisions of design details.

Should the final decision require a clearance somewhat less than 17 feet, it would be possible to again modify these designs with a minimum of effort and cost, prior to or shortly after construction has started. It is not contemplated that any additional structure designs will be modified until such time as a firm decision is reached as to actual vertical clearance requirements.

Mr. MAY. Mr. Chairman, we might take note that a couple of items here which perhaps are not definitely connected with cost, but we have this quote—

The lack of definite information regarding required vertical clearances at structures will materially delay the Interstate System program in Wisconsin. The Milwaukee County Expressway Commission has recently indicated that a month's loss of time now in the design of certain structures on the expressway system may result in the loss of the entire construction season in some instances—

and also the quote—

Design work which is being performed by consultants has also been suspended. Since a major portion of the structural design on the Interstate System is in the hands of consulting firms, we anticipate that there will be a number of requests for material increases in compensation.

So it does have some effect.

Mr. BALDWIN. Mr. Chairman, it might be appropriate in this connection to take note of the fact that while the States or one State has commented that their whole construction program has been blocked, that this same week a committee of Governors apparently representing the conference of Governors that come before the Ways and Means to give them more money than we had appropriated for that same year.

Mr. TURNER. Mr. May, it should be pointed out that the memorandum I read was dated January 13, forecasting certain things which might come about if a decision was long delayed. The decision was final and official and transmitted to all of the offices 2 weeks later to the day.

Mr. MAY. That is true, Mr. Turner. Do you have a copy of a letter dated January 18, 1960, from the regional engineer to Commissioner Armstrong?

Mr. TURNER. Yes, sir.

Mr. MAY. Will you read that, please?

Mr. TURNER (reading):

Internal memorandum of the Bureau, dated January 18, 1960, from Mr. R. H. Harrison, our regional engineer at Chicago, to Mr. Armstrong, Commissioner of Public Roads, Washington.

It reads as follows:

In our memorandum of January 13, 1960, about 17-foot vertical bridge clearance, we indicated we might have further comments after reviewing the division reports on this subject.

We have nothing to add except to emphasize the increasingly embarrassing positions of the States with their consulting engineers, of the divisions with the States, and the regions with the divisions, as a result of indecision in that matter. We realize, of course, that this is similar to the situation of your office. However, we consider the resulting impairment of these relationships to be a very important phase of this problem.

Mr. SCHERER. If these States think they are having trouble now with this vertical-clearance problem if this policy, which I understand is a new one, to cut back on the urban sections of the Interstate Sys-

tem is adopted, they are really going to have headaches and we will really slow up this program.

Mr. MAY. Mr. Turner, do you have available——

Mr. CRAMER. Let me ask a question. In other words, these complaints from the States originate largely from the fact that AASHO passed a resolution for 17 feet on October 5, and the two letters you read were January 13 and January 18. Both of those, as I gathered it, reflected upon what the results would be if this indecision continues. Largely, it is not, because after all we are only talking about a mere period of 3 months prior to that time.

Mr. TURNER. I am sure that is right, Mr. Cramer.

Mr. BLATNIK. Three months is only a quarter of a year, and I would like to point out that in the 3 previous years, there has been a buildup and reorganization and staffing of State departments, the industry was gearing up with the machinery, contractors building up their organizations and they were almost at the peak, ready to start peaking into this program, when 'way last July the funds got cut off, and things lapsed, if maybe not collapsed, and they are just barely coming out of this, hoping they have this thing resolved in October. I know of projects that were ready to be let in September and October, and they said, "Well, wait for 2 or 3 weeks and see what happens, we will hear from the Bureau, we are all together." In Boston—I was up there—they came to an agreement on 17, and said, "Go home and redesign, revise this." They went right home, proceeded at once, with no question in their minds that this was the new level.

Now when you start here, you have contracts ready to be let in October, you go back home the latter part of October and start revising, and in many instances, with the approval and concurrence, at least informally, of the regional and district offices, and 2 months later they tell you to stop that revision, go back to the old one.

They would have had a lot of construction work done in the fall season, but by winter it is too late and they have to wait, and as they say here, the whole work season is lost and you have to wait until around March before they can start a project set to go 'way last September; that is half a year with the whole gigantic operation ready to be approaching its peak level performance.

Mr. SCHERER. I agree with you this time, perhaps we were in that position, but this delay caused by this indecision, we call it that, is nothing compared to what happened to this program when this Congress failed to provide the necessary funds. That is what stopped this program.

Mr. CRAMER. Not only that, in the first letter he read, January 13, it said that the work has been proceeding on other phases of the system with overpasses being held up until this decision was made.

Mr. TURNER. No, sir. When you go into long-range construction programs and let a contract, it takes a long time to complete the entire contract so if there is indecision on overpass for a couple of months, that doesn't mean the whole project is stopped. That is as I understand his letter, the work has proceeded on other phases of Interstate System.

Mr. SCHWENGEL. Mr. Chairman, I would like to interject this thought. But first saying I think our normally very fair and dedicated chairman is in a sense prejudging the testiony at this point.

I am sorry to see that because I think what we are trying to do is get at the facts here and I would like to ask Mr. Turner this question in connection with a point that I think we should make. In your opinion, is there any gross dissatisfaction among the State highway departments who had to deal with you on this subject? Have they expressed any great dissatisfaction with the way you are handling this?

Mr. BLATNIK. Will the gentleman yield at that point? I would like to see him answer the same question and have Mr. Turner say what he thinks. I would like to hear that too, if there is dissatisfaction, and I think the gentleman is correct when he states perhaps some of us are disturbed and frustration results with fumbling around so long, and perhaps we do have an inclination maybe to prejudge it.

I hope I haven't done it. If I have, it has been inadvertent and our intention here on this particular thing of getting into the record the attitudes of the various States was to get the facts.

Now you may be correct, and the gentleman from Ohio may be correct, it may not amount to very much and, on the other hand it may amount to something, but on the record all we want to do is get the facts from the documents, the correspondence we have from the various State departments, the various district engineers, various regional offices of the degree or extent of the uncertainty and the result.

So we get those facts. So, I think we should proceed to get them. We are almost through with documenting that and we can evaluate it.

Mr. SCHWENGEL. Will the chairman allow the gentleman to answer my question on whether there has been any evidence of gross dissatisfaction on the part of the State highway departments with which you have to work on this problem?

Mr. TURNER. I assume you are referring to the clearance matter?

Mr. SCHWENGEL. Yes, on the clearance question now?

Mr. TURNER. I don't believe there is dissatisfaction with the Bureau. They realize that there was a decision that was pending which we could not give the answer on yet and naturally everybody was anxious and fretting for a quick resolution of the problem.

We couldn't give them the answer but in the meantime I believe everybody was moving ahead the best they could on other types of work and making the best of the situation.

Mr. SCHWENGEL. They were aware of the fact you were not authorized by law to make a decision. Is that right?

Mr. TURNER. I believe by and large they were.

Mr. CRAMER. They were fretting over the congressional action; how this system was going to be financed.

Mr. SCHERER. There is a great deal of dissatisfaction by the States insofar as another phase of this program is concerned, namely, the cutback in funds?

Mr. TURNER. Yes, sir.

Mr. SCHERER. You are getting the devil from all over the country every day on that?

Mr. TURNER. This is only one of a number of things.

Mr. SCHERER. The principal cutback in this program that our chairman very rightly said prevented us from reaching the construction peak resulted from lack of funds. The States were doing a good job, contractors were doing a good job, and all of a sudden we materially cut it off, didn't we?

Mr. TURNER. Yes, sir.

Mr. MUMMA. Mr. Chairman.

Mr. BLATNIK. Mr. Mumma?

Mr. MUMMA. Mr. Chairman, there is one thing that may have caused a lot of this delay if there has been a delay. You know these clearances we are talking about were all built out of steel and I don't know how long ago that was and, of course, we have a lot of prestressed concrete now, but that may have accounted for a lot of the delay.

Mr. BLATNIK. Will you continue, Mr. May.

Mr. MAY. Mr. Turner, do you have available a letter dated January 12, 1960, from Mr. Frick of the Indiana Highway Department? Will you identify that and read it, please?

Mr. TURNER. Memorandum of January 12, 1960, on the letterhead of the Indiana Department of Highways. Signed by Mr. Walter H. Frick, engineer of road location for the Indiana Highway Department, addressed to Mr. George Hayes, one of our engineers in the Indianapolis office of the Bureau.

The work of the road location department is being hampered by the delay in the decision regarding the clearance—height on road separation structures for interstate routes. Often the location of an interstate route is determined by conditions existing on side roads having separation structures. And if an added 3 feet of clearance is to be provided the main lines must be moved to prevent excessive property damage or construction costs.

Even in those areas where the route location is not determined by road separations, the alinement on the side road may be determined by the grade necessary to provide the proper clearance. These changes in location can generally be made as paper relocations of the original located route but that creates additional work during the design and construction stages of the project and may even require additional field survey information. Since route surveys precede actual development of plant and construction of the road by several months, it is important that the locations being established at the present time satisfy the requirements and standards to be met on future construction.

An example of the effect this matter of clearance height has on our work is that the location of a 2-mile portion of the Interstate Route 69 in the vicinity of Anderson, Ind., has been delayed for 2 months in anticipation of a decision which still has not been received.

In all locations possible we are attempting to provide for the greater clearance height if it becomes necessary but it is certainly more difficult to meet the requirements on still undetermined standards, than it would be to meet those of any one established standard. An early decision on this matter would certainly result in fewer future alternate surveys on locations now being established.

Mr. MAY. Thank you, Mr. Turner.

Because of time, we will cover just one more region and eliminate the others. What States are covered by region 6?

Mr. TURNER. Those are the ones I just gave to you. I believe region 6 has headquarters in Fort Worth, Tex., Arkansas, Oklahoma, Louisiana, and Texas.

Mr. MAY. What general instructions were issued by region 6?

Mr. TURNER. No general instructions were issued in the beginning of this time interval we referred to. On the 14th of December, teletype was sent to the four division engineers as follows:

We have informal advice from Washington office that 17-foot vertical clearance on interstate structures may be approved if requested by highway departments, but that we should not initiate or actively encourage submission of such requests. This is for your guidance pending determination of a firm policy.

Signed by Taylor, regional engineer at Fort Worth.

Mr. MAY. Mr. Turner, this is an example of how regional engineers might differ in their interpretation of instructions or in a decision where they received no instructions.

Pardon me, region 5, on December 11, 1959, as we have already heard; the regional engineer wrote to his division engineers and he stated, and I quote:

> Due to the uncertainty that has developed in this situation, Public Roads is not in a position to approve the use of 17-foot clearances at this time.

So, on December 11, he said Public Roads could not approve the use of 17-foot clearances. Three days later, on December 14, 1959, regional engineer of region 6 sent forth a telegram to the division offices stating, and I quote:

> We have informal advice from Washington office that 17-foot vertical clearances on interstate structures may be approved if requested by highway departments.

Don't those seem to be at variance?

Mr. TURNER. They do, if you took them out of context, Mr. May, and without knowing the other discussions that were had within the Bureau and the understandings that we had, all of which I believe are in line with what I have said in the beginning, that we were approving generally what the States proposed. There were some exceptions to that where our regional or division engineers felt on an individual basis that they might involve considerably more cost than otherwise would be justified.

Mr. MAY. Would such a situation have been the Montana situation?

Mr. TURNER. I believe that would have been the logical explanation of that one; yes, sir.

Mr. MAY. $2,000 per structure would have been considered excessive?

Mr. TURNER. I don't believe that would necessarily be the total cost. You would have to consider that as a standard with respect to all other structures and the effect of that on other elements of the cost.

Mr. MAY. Mr. Tallamy, do you think such situations as we have heard described here at the hearing for the past week or two might be handled more expeditiously and perhaps more satisfactorily?

Mr. TALLAMY. Well, as I indicated before, I do think that there is a possibility that we could have saved some time if we had the benefit of the present knowledge at that time. But I don't believe, and I am positive in my own mind, that the surveys and studies that were carried on, both by the Bureau and by the Department of Defense, have actually fortified this final decision that has been made; and if we had, for example, accepted within a few weeks' time the preliminary letter which came over to us early in 1959, and then had advanced it, and when a year from now we get into the financing of the interstate highway program we are called upon to justify the increase in standards and the additional cost which it involves and we don't have on the record the fact that we made a very careful study and appraisal of the situation and are not thoroughly able to document the need for a standard that is going to raise the cost of the Interstate System, it might very well do serious harm to the financing of the program. So I don't believe that the time that has been consumed in the actual studies and surveys made either on the part of the Bureau

or the Defense Department has been lost at all. I do recognize that we might possibly have been able to compress a little time out of it by getting together and putting a priority on it, but, on the other hand, that priority has to be gaged along with our other activities. And, as I indicated before, so far as my staff is concerned, we were engaged in very serious priorities.

Now, Mr. Counsel, I would like to summarize, if I may, a little bit on what you have just been discussing with Mr. Turner. I think we all recognize that there was a degree of uncertainty between the time that the States acted and the recommendation was made to the Secretary of Commerce for approval and the final adoption of 16 feet. There is no question there was uncertainty, and we all proceeded, after the actual action, in anticipation that the 17 feet would be rather quickly confirmed. But as time went on there became an increasing degree of uncertainty which finally became quite pronounced at the time that the 17 was changed, or possibly was going to be changed, to 16 feet. And at that particular time all our regional people were in the Washington office and discussing other matters, and it was brought out at that particular time that there was a possibility now that this would be changed from 17 to 16 feet, and that we should be very cautious and, as a matter of fact, not approve the 17 feet, and to analyze the individual——

Mr. BLATNIK. Mr. Tallamy, may I interrupt at that point. You mean be cautious about the 17-foot figure, Mr. Tallamy. When you received that recommendation from Secretary of Defense McElroy, the Department of Defense was requesting a clearance raised from 14 to 17 feet minimum, did you accept that as the sound figure, the best judgment of the Defense Department, that was what they needed; that is, what they could and should justify?

Mr. TALLAMY. When General Besson submitted the letter to me, is that what you are speaking of?

Mr. BLATNIK. Yes, sir.

Mr. TALLAMY. Recommending 17 feet; I was convinced, of course, that was their need. They had originally submitted 17 feet, and at my meeting with them in May we jointly concurred in the advisability of a restudy, and restudy had resulted in his opinion that the various staffs in the Department of Defense desired 17 feet, and I accepted it knowing that they had made this restudy.

Mr. BLATNIK. When you submitted that recommendation to the AASHO Convention in Boston, from a discussion there, was there much question as to the States, were they hesitant as to the validity and soundness of the justification for the 17-foot figure?

Mr. TALLAMY. No; the matter was presented to the executive committee and General Besson's letter was read and the executive committee appointed a small committee in turn to draft a resolution to all of the States, and there was no question; and it was presented to the States and the States unanimously approved it, but did so on the basis of a defense need.

Mr. BLATNIK. Here we have unanimous concurrence now—Defense, Bureau of Roads, and AASHO people.

Mr. TALLAMY. That is right.

Mr. BLATNIK. You said that it had the approval of the AASHO people and the recommendation was sent to the Secretary of Com-

merce, Mr. Mueller. Now, referring back to a letter written back in November—November 24, 1959, by the regional engineer of region 5 to his division engineers, the letter is already in the record. I will quote this part:

During the trip to Washington last week—

this is the end of November—

it was learned that requests for revision of the standards has been received by Public Roads from AASHO and has been transmitted to the Secretary of Commerce for his consideration. These moves were in accordance with the discussions at Boston. However, the revision has run into administrative problems and some time may elapse before a final decision is reached. The Secretary of Commerce now has asked the Department of Defense for its position on bearing the increment of additional cost and it is understood that the Bureau of the Budget also is involved in the discussions.

Now, this is in the final phase of this determination, and it involves directly by law the Secretary of Commerce and the Secretary of Defense. Somehow it seems that the Department of the Budget is involved. At this point the Secretary of Commerce appears to be concerned not with the military requirements for the defense function of the system but they are concerned for the Department of Defense position on its bearing the increment of additional cost. So the factor involved is no longer a decision based on sound military needs recommended by the Department of Defense, concurred in by the Bureau of Public Roads, who have been on this for 3 years, approved unanimously by the AASHO Convention, and now at the very top, the deciding factor is to be the monetary feature. Would that be a correct interpretation of the situation at this last phase?

Mr. TALLAMY. I am sorry, Mr. Chairman, I don't know whether the Budget Bureau was involved in this or not, personally, and I assume the Department of Defense has very carefully again restudied the 17-foot recommendation and have finally agreed that the 16 feet would be adequate. Further than that, I have no knowledge.

Mr. SCHERER. I hope the Bureau of the Budget was concerned at that time. It was at the very moment that we—again, I don't want to belabor the point—but it was at that very moment they realized they weren't going to get the money they had been asking this Congress for for 9 months in order to continue the program at the construction levels provided in the 1956 act. Here we were coming along with a recommendation. No one knew it was going to cost more, so they had to find out. They didn't have enough money to finance normal construction even with the standards we had.

Mr. CRAMER. So far as the 17-foot recommendation Defense submitted to you is concerned, you accepted that as a Defense decision, didn't you?

Mr. TALLAMY. I did.

Mr. CRAMER. I assume AASHO did the same thing; they accepted the determination by those that are supposed to know—are the authorities on the question of defense—17 feet was needed.

Now, when they came back and reconsidered the question in the light of all the factors, they decided they could get along with 16 feet. Well, don't you think that if 16 feet had been submitted to AASHO instead of 17, they would have just as readily gone along with it and wouldn't you just as readily go along with it?

Mr. TALLAMY. I did and AASHO did.

Mr. CRAMER. Certainly.

Mr. SCHWENGEL. On this question of postponement, let me ask you, Mr. Tallamy, did the fact that Congress did not act on the highway bill for more money until September—is the fact that the President didn't get to sign it until after we left the Congress cause a delay in this whole program in some respects?

Mr. TALLAMY. Yes, sir; it did.

Mr. SCHWENGEL. And on many other areas of the program?

Mr. TALLAMY. It did.

Mr. SCHWENGEL. Now it is also true, isn't it, and this has been stated and I want to ask this question again purely for emphasis, isn't it true that when we passed this bill, we didn't provide enough money to get this back on schedule?

Mr. TALLAMY. That is correct.

Mr. SCHWENGEL. For building of an interstate highway?

Mr. TALLAMY. That surely is correct.

Mr. SCHWENGEL. Now I would like to know if you can tell us at this point, how much money has been taken or used from the trust fund, how much has been put into this Interstate System already, by provisions of the bill that we passed originally?

Mr. TALLAMY. The total cost on the Interstate System alone——

Mr. SCHWENGEL. Let me ask this, Mr. Tallamy, you have those figures, can you find them and put them in the record?

Mr. TALLAMY. I have it here now.

Mr. SCHWENGEL. All right.

Mr. TALLAMY. I have, at the present time, $4.5 billion in round figures for construction underway and construction completed since July 1, 1956. That does not involve the amount of money that has been placed under contract for engineering and right-of-way and when those figures are added to it, we have obligated this year, a total for the Interstate System in Federal funds of $6,174 million.

Mr. SCHWENGEL. Now, can you answer this question: If we had been on schedule, how much money would have been spent? As I recall, another $1½ billion or $2 billion. I think I saw that figure somewhere. Is that approximately correct?

Mr. TALLAMY. As of today, there is about $2.5 billion of unobligated apportioned money and I think that is what you are referring to, but, of course, it wouldn't be physically possible to place all of that under construction in this past 8 months, but I would say that we are at least another half a billion behind.

Mr. SCHWENGEL. Isn't it true that one reason you had to come to Congress last year, you asked for more money, was the fact that we were in an inflation period?

Mr. TALLAMY. Yes, sir.

Mr. SCHWENGEL. Inflation was one cost, one of the main reasons you had to come to Congress?

Mr. TALLAMY. That is right.

Mr. SCHWENGEL. And many of us realize, I think most of us realize, that Government policy in the past has been the cause of inflation or deficit spending; isn't that true?

Mr. TALLAMY. Well, I am an engineer, I am not an economist.

merce, Mr. Mueller. Now, referring back to a letter written back in November—November 24, 1959, by the regional engineer of region 5 to his division engineers, the letter is already in the record. I will quote this part:

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Mr. TALLAMY. I have it here now.

Mr. SCHWENGEL. All right.

Mr. TALLAMY. I have, at the present time, $4.5 billion in round figures for construction underway and construction completed since July 1, 1956. That does not involve the amount of money that has been placed under contract for engineering and right-of-way and when those figures are added to it, we have obligated this year, a total for the Interstate System in Federal funds of $6,174 million.

Mr. SCHWENGEL. Now, can you answer this question: If we had been on schedule, how much money would have been spent? As I recall, another $1½ billion or $2 billion. I think I saw that figure somewhere. Is that approximately correct?

Mr. TALLAMY. As of today, there is about $2.5 billion of unobligated apportioned money and I think that is what you are referring to, but, of course, it wouldn't be physically possible to place all of that under construction in this past 8 months, but I would say that we are at least another half a billion behind.

Mr. SCHWENGEL. Isn't it true that one reason you had to come to Congress last year, you asked for more money, was the fact that we were in an inflation period?

Mr. TALLAMY. Yes, sir.

Mr. SCHWENGEL. Inflation was one cost, one of the main reasons you had to come to Congress?

Mr. TALLAMY. That is right.

Mr. SCHWENGEL. And many of us realize, I think most of us realize, that Government policy in the past has been the cause of inflation or deficit spending; isn't that true?

Mr. TALLAMY. Well, I am an engineer, I am not an economist.

Mr. CRAMER. Mr. Tallamy, during this period of October to January, as I recall it—in the 1959 act which came on sometime in the middle of September, Congress made some substantial changes in the existing law, did it not, that changed the formula for allocation of the States as a result of less funds; it reinstated the Byrd amendment; it changed the billboard provision for communities involved; it made various substantial changes affecting the entire program. Now, during that same period that you were considering this, you also had to make those major decisions and administratively carry out the law, so I can't see there is any basis of criticism of not putting in this particular bridge height on an adequate priority basis when you had these major decisions that Congress had dumped in your lap. Now I just don't see the basis for any criticism.

Mr. TALLAMY. I might point out, if I may, that I arrived here in 1957 and at that particular time, the problem was that we were going too slow and then the next year, it was costing too much. Last year we were going too fast, and it was still costing too much. So those are the problems with which we are confronted and they did take a great deal of time.

Mr. CRAMER. The whole program has been in a state of flux since it has been enacted so far as financing, Byrd amendment, billboard provisions, and everything else, let alone the administrative requirements in carrying out the basic act itself. Your board has had a tremendous responsibility and I don't see any basis of criticism in that this was possibly not given as high a priority as hindsight might have indicated it should have been given.

Mr. BLATNIK. If we may continue, these are all important points, but time is pressing as the afternoon approaches, and the Assistant Secretary of Defense is here.

Could we have an agreement? We are almost completed with our interrogation of Mr. Tallamy and Mr. Turner; aren't you, Mr. May?

Mr. MAY. Yes, sir; I would like just to include in the record, as exhibit 51, this memorandum to the field from Mr. Armstrong that is dated January 27, 1960, and reads:

EXHIBIT 51

The Secretary of Commerce today approved minimum vertical clearance of 16 feet on Interstate System. Instructional memorandum follows.

Mr. BLATNIK. Mr. Tallamy, again thank you very much on behalf of the chairman and members of the committee for your cooperative help and assistance and for your appearance here this morning, and to you too, Mr. Turner, again we express our appreciation.

Mr. TALLAMY. Thank you very much, Mr. Chairman.

Mr. BLATNIK. There will be a 10-minute recess and then we will proceed with the hearing of Mr. McGuire.

(Short recess.)

Mr. BLATNIK. The subcommittee of the House Public Works Committee holding hearings on the Federal aid highway program will resume its hearings. Our next witness, who is scheduled also to be the final witness, is the Honorable Perkins McGuire, the Assistant Secretary of Defense, Supply and Logistics. Mr. Secretary, thank

you not only for your appearance here but for your cooperation in our investigatory work and standing by all morning long until early afternoon in order to enable this committee to complete, we hope, the hearings today. Mr. May, will you proceed with the interrogation?

STATEMENT OF HON. PERKINS McGUIRE, ASSISTANT SECRETARY OF DEFENSE (SUPPLY AND LOGISTICS), DEPARTMENT OF DEFENSE

Mr. MAY. Mr. McGuire, how long have you held your present position?

Mr. MCGUIRE. Since the latter part of 1956—December, to be specific.

Mr. MAY. We have previously heard in testimony that certain regulations in the record have given to the Chief of Transportation of the Army the responsibility to officially act for the Department of Defense in insuring that defense needs are integrated into the highway program of this country.

We have also heard that the Assistant Secretary of Defense, Supply and Logistics, which position you hold, has certain responsibilities relating to highway needs of the Defense Department, which are delegated to you by the Secretary of Defense in Department of Defense Directive No. 4500.22 dated October 18, 1955.

Under responsibility in that directive under section A it states:

> Assistant Secretary of Defense, Supply and Logistics, shall be responsible for providing necessary guidance and assistance to the Department of the Army in carrying out the functions hereinafter assigned.

The directive then goes on and defines the responsibilities of the Department of the Army, which is section 1, which is designated, and I quote:

> Executive agent for the Department of Defense in matters pertaining to public highways to serve the national defense in meeting possible peacetime and mobilization highway transportation needs.

And section 7 under "Implementation" states—and I quote:

> The Assistant Secretary of Defense, Supply and Logistics, shall be kept currently informed by the Department of the Army of all policies and procedures in connection with the computation of responsibilities contained herein.

We have heard testimony that on January 17, 1959, Mr. Chacey met with Mr. Earl R. Smith, Director of Transportation, Communications and Petroleum Policy, Office of Assistant Secretary of Defense, Supply and Logistics, and Mr. R. L. Hicks, Office of Secretary of Defense, Research and Engineering.

Mr. Chacey told us that at that time, they reviewed the January 1959 draft letter to be signed by General Besson, which requested the vertical clearance standard be changed from 14 to 17 feet and he also said that they agreed the position was reasonable and proper and the manner in which he was resolving it both within the Department of Defense and Bureau of Public Roads was appropriate. Was Mr. Smith a subordinate of yours, Mr. Secretary?

Mr. MCGUIRE. Yes, sir, he was.

Mr. MAY. Was Mr. Smith an appropriate person within your office to whom Mr. Chacey ought to have referred the matter?

Mr. McGuire. I would consider him to be.

Mr. May. Was the matter brought to your attention at that time, in January of 1959?

Mr. McGuire. Not to my knowledge.

Mr. May. Now on February 26, 1959, Mr. Chacey again met with representatives of your office—according to his testimony, Mr. Milne, Deputy Assistant Secretary of Defense, Supply and Logistics, and Mr. Earle Smith.

At that time, Mr. Chacey said he briefed them generally on matters within his office, including the vertical clearance problem. He did not ask for their concurrence in the proposed draft letter we mentioned; however, they were made aware of the existence of the problem.

Were you informed of the problem at that time in February of 1959?

Mr. McGuire. Not to my knowledge, no. I don't know that anyone considered the problem as such.

Mr. May. Was your Deputy Assistant Secretary of Defense, Supply and Logistics, the appropriate person within your office for Mr. Chacey to refer the matter in compliance with the directive?

Mr. McGuire. Well, I am not familiar with the background of this, but certainly Mr. Milne, in his capacity as my deputy, was the appropriate person to discuss this with.

Mr. May. We have heard that on October 1, 1959, your subordinate Mr. Germane, Director of Transportation Policy, Office of Assistant Secretary of Defense, Supply and Logistics, signed concurrence to General Besson's letter to the Bureau of Public Roads requesting an increase in the vertical clearance standard to 17 feet.

Mr. Secretary, was it necessary, under the regulations governing his responsibility, for General Besson to receive concurrence from your office before making the recommendations to the Bureau of Public Roads?

Mr. McGuire. I do not think that was necessarily spelled out. It was left to his judgment and the fact that—what he was handling in this respect. I suspect that he came down there on the matter of keeping these people informed.

Mr. May. So that actually General Besson went beyond what he was obliged to do and secured what he believed to be the additional assurance that what he was doing was proper?

Mr. McGuire. I think it can be construed that way.

Mr. May. Now on November 18, 1959, you received a memorandum from Secretary of Defense McElroy's military assistant, Brig. Gen. C. A. Randall, did you not?

Mr. McGuire. I believe that is the correct date, sir.

Mr. May. Was it on this occasion that you first became aware of the vertical clearance problem?

Mr. McGuire. Yes, sir; it was.

Mr. May. Now, attached to that memorandum, according to our information, was the November 12 letter from Secretary of Commerce Mueller to Mr. McElroy in which Mr. Mueller pointed out that any substantial cost increase which is entirely defense related would certainly raise in the minds of the Congress and the highway user groups the question of charging this cost to national defense budgets or otherwise from general appropriations; and he also pointed out that

numerous individual Congressmen raised the issue during recent hearings on the increased motor-fuel tax.

In that letter, Mr. Mueller also asked Mr. McElroy for his advice on both the policy and budgetary points of view. Also included in that letter, of course, was the letter from Mr. Tallamy, Highway Administrator, to the Secretary of Commerce, dated October 27, in which Mr. Tallamy had recommended that the 17-foot clearance be adopted.

Was this the first time, Mr. Secretary, that you had occasion to see General Besson's letter?

Mr. McGUIRE. It was.

Mr. MAY. Thereafter, on November 27, 1959, Mr. McElroy answered the Secretary of Commerce. Are you familiar with that letter?

Mr. McGUIRE. Yes, sir. It might be helpful with respect to these various areas we are covering in our office—transportation, which also includes railroads, shipping, MATS, and so forth—we have communications, petroleum, supply management, overall requirements, procurement, small business, and production.

I think we cover about as wide a field in this respect a cross section, as any office we have in the Department of Defense. We have people whom we believe to be very capable people heading up these respective areas, and therefore we operate and I think we should, that unless they foresee a problem, that we must give them latitude to move in order to get some things done.

Mr. MAY. So we understand, Mr. Secretary, this matter was one of just very many matters being handled by your office?

Mr. McGUIRE. Including the MATS report.

Mr. MAY. In Mr. McElroy's letter to Secretary of Commerce, he points out that a thorough study of the need for increasing vertical clearances on the Interstate System will be conducted.

It was felt at that time that the matter was to be referred to you?

Mr. McGUIRE. Correct.

Mr. MAY. We have a copy, Mr. Secretary, of the memorandum addressed to you from General Randall. Do you have a copy available?

Mr. McGUIRE. Yes, sir; I have one in front of me. I think, Mr. Counsel, we gave you most of this information and have tried to be very cooperative with you to save time to give you any of the correspondence on this. This is not a classified matter.

Mr. MAY. Certainly most cooperative, Mr. Secretary.

Mr. SCHERER. The next time, will you send the minority copies, too? We would appreciate it.

Mr. McGUIRE. I just assumed, sir, that the counsel was working for the committee in this respect.

Mr. MAY. Mr. Secretary, would you read this memorandum received by you from Brigadier General Randall dated November 18, 1959?

Mr. McGUIRE. It is as follows:

Secretary McElroy has seen the attached letter from the Secretary of Commerce dated November 12 regarding the request of the Army Transportation Corps to increase the standards for vertical clearances for overpasses.

Mr. McElroy questions why this proposal should have been made without being reviewed at higher levels in the Department of Defense. He feels further

that this requirement could be eliminated by conversation with the military departments, particularly the Air Force.

Mr. McElroy asked that you personally interest yourself in this problem and participate in a prompt draft reply for his signature to the Secretary of Commerce.

Mr. MAY. I notice that General Randall states in that memorandum, first, that Mr. McElroy questions why this proposal should have been made without being reviewed at higher levels in the Department of Defense.

When Mr. Chacey did contact the various people that we previously mentioned within your office, he did carry out that function, did he not?

Mr. MCGUIRE. Yes, sir; I think Mr. McElroy's query was directed in the fact that he was not aware that the Department of the Army in matters such as this had been made the executive agency of this matter. Or at least that was what General Randall told me in respect to this. He was not challenging necessarily this act but he was curious as to how they were the ones who transmitted this information for the Department of Defense.

Mr. MAY. Now in the next sentence General Randall in speaking of Mr. McElroy, and I quote:

He feels further that this requirement could be eliminated by conversation with the military departments, particularly the Air Force.

Did you have any conversation with Secretary McElroy regarding this matter?

Mr. MCGUIRE. Not that I can recall. I knew, obviously from talking with General Randall, that Mr. McElroy did not know the background of the situation and I did not take the sentence, if you are implying that, to mean, a requirement on me to eliminate this requirement.

What Mr. McElroy wants his people to do is to face up to these things squarely and to take a good hard look at them and give him their recommendations.

Mr. MAY. Mr. Secretary, what is your interpretation of the sentence—

He feels further that this requirement could be eliminated by conversation with the military departments, particularly the Air Force.

Mr. MCGUIRE. Well, I just feel that this was his quick reaction without knowledge of the facts, but nevertheless, not one that his feeling was concrete, after the reviews, that he would not be willing to look at the results of the review—he was not directing, in other words, for me to take a position.

Mr. WRIGHT (presiding). Mr. Secretary, did you interpret this statement as meaning that Secretary McElroy felt that the entire requirement of raising the standards at all could be "eliminated by conversation"?

Mr. MCGUIRE. Candidly, Mr. Wright, I did not pay much attention to this sentence as such, because further on, he asks that personally I interest myself in this problem and get to the bottom of it and find out what the right position—if our position was right.

I got this from talking with General Randall. You must bear in mind that this is a draft where General Randall is interpreting what

he felt that Mr. McElroy wanted done, or let us say, how he felt about the matter.

Mr. WRIGHT. This referred to the 17-foot clearance requirement?

Mr. MCGUIRE. At that time the clearance recommendations, Mr. Wright, was at 17 feet.

Mr. WRIGHT. Thank you.

Mr. MCGUIRE. I did not take this as direction that I do one thing or other except examine it and come up with my best judgment on the problem.

Mr. WRIGHT. Mr. May?

Mr. MAY. When this matter was referred to Secretary McElroy, there was also submitted to him a copy of General Besson's letter directed to the Bureau of Public Roads officially requesting 17 feet and setting forth in detail the reasons for that request.

In addition to that, the Secretary was furnished Mr. Tallamy's letter recommending that the standard be adopted. We have heard, Mr. Secretary, that eventually the requested 17-foot standard was changed and a recommendation made for 16 feet.

Mr. MCGUIRE. I think I sent a copy to you of my letter to the Secretary of Commerce setting forth this.

Mr. MAY. Yes, sir; and I believe we have already introduced it in evidence. Did you in that letter recommend 16 feet?

Mr. MCGUIRE. We did.

Mr. MAY. Could you explain to the committee how and why the decision was made to reduce the standard from the requested 17 feet to a new standard of 16 feet?

Mr. MCGUIRE. Certainly. I discussed this matter with representatives of the Air Force, representatives of the Army, and representatives from my own office. I also discussed this matter with Dr. York and General Schriever. This was in respect to the future possibilities of the missile program. Looking at it from where I sit, I am not a missile expert and I had to go to these gentlemen for it.

When you talk to people who are not experts, they have all ideas of where missiles are going and I just wanted at least to have that competency behind me in any decision I might make in the matter.

In reviewing this with the military services, it became, from my point of view at any rate, evident that we did have a requirement which would give us greater flexibility at 16 feet and, as you went out toward 17 feet, this was not as valid in my judgment.

I think that Dr. York and General Schriever expressing this matter, both pointed out, and I think they are right, how high is high, if you want to put it that way. Where do you stop for a reasonable level on this thing and it seemed to me that we had a reasonable need in the 16-foot area; beyond that, someone began to question us rather seriously.

Now, I asked the military departments, having come to that general conclusion, whether they saw any problems in this respect and General Besson informed me that he concurred in that clearance. I think he so testified, if I am not mistaken.

Mr. MAY. As General Besson pointed out in his letter to Mr. Tallamy, of October 1, a detailed study had been made of this problem, it had been thoroughly coordinated and it was the official position of

the Department of Defense that 17 feet was needed. Was General Besson in error in his October 1 letter?

Mr. McGuire. No, I do not think he was in error. I think that in his judgment, he was probably putting in a little more of a safety factor than I felt necessary in the area.

Mr. May. On what did you base your decision, Mr. Secretary?

Mr. McGuire. I thought I just explained it to you.

Mr. May. On that particular point?

Mr. McGuire. I asked them if they could live with it, and they said, Yes. There is a saying, of course, that the military would like to have everything—so would I in many aspects, too—and I felt that we had probably gotten this down to a fairly firm basis of the necessary height in this matter.

Mr. Wright. Mr. Secretary, without belaboring the point, the military wanted 17 feet.

Mr. McGuire. They had come up, Mr. Wright, with an agreed on position of 17 feet. I think the Air Force in the course of this, had come up with a position of 16 feet and there were some who wanted a 17-foot, and they were willing to go along with that. I believe the Navy had a position that was practically negative in the subject, as I review the papers, so they were not really a party to the determination of it, they went along with what the agreed on position was.

Mr. Wright. The request had been for 17 feet?

Mr. McGuire. The request?

Mr. Wright. For the recommendations?

Mr. McGuire. For the recommendations.

Mr. Wright. They had been living with a 14-foot minimum standard prior to that time?

Mr. McGuire. That is correct.

Mr. Wright. So that a question as to whether they could live with 16 feet would presuppose its own answer, would it not, sir?

Mr. McGuire. No, I don't think it does, Mr. Wright. We have, if you use this expression, lived with 14 feet, we have had a clearance of 14 feet and we have moved a number of things around the country and I have not heard so far that by some way, hook or crook, we have not been able to get these things there.

There may be some inconvenience, but as I understand this system—and this is the position that the staffing people, who are much deeper in this than I was at that time prior to getting into it—that they point out the fact that if you develop this system, you create more of these problems that where you can do something today, you can't do it in the future.

So I don't think it is quite the same thing. I think when I am talking to them in the terms of 16 feet, they are pretty well taking a very hard look at this thing projected into the future on a reasonable basis of what they can get along with and in consideration of the requirements that we have known at this time.

I think I might add this to you that—and I don't know this is even pertinent to this, sir, I offer it only as an observation.

As you know, the Minuteman, as Dr. York mentioned yesterday, has come into this program and I think the people in the missile business feel very strongly that the direction fundamentally of the missile operation is to a smaller capability of a missile.

To me, as a layman, and not a physicist or engineer, this is not surprising. The radio that I knew and was sold in the retail business in 1936, and through the forties, was a fairly large-size table model. Today we have some little small ones we can put in our pocket. We learn by science how to make these things more effective and smaller.

Mr. WRIGHT. The principal advantage of the Minuteman is its high degree of mobility, isn't it?

Mr. McGUIRE. I think this is one point that is stressed with the Minuteman. The Minuteman will be used in, I guess you would call it site locations, and also there is a plan to have it on railroad trains, as you know.

Mr. WRIGHT. Some discussion was had a few days ago, I believe, with Mr. Alex Whilldin, Department of the Army, concerning an instance which reportedly occurred during the Korean war in which some 50 tanks were dismantled, transported to the west coast, and then shipped in that dismantled state to Korea, and which reportedly were never capable of being placed into action. Are you familiar with that?

Mr. McGUIRE. No, I am not, but I think General Besson might be. Are you familiar with it, General?

General BESSON. I would like to address myself to that, Mr. Chairman. The question of the 50 tanks was introduced into the testimony actually by the counsel. Subsequently——

Mr. WRIGHT. General Besson, the question of 50 tanks, I believe, was introduced in the testimony by myself, as a question directed to Mr. Alex Whilldin.

General BESSON. I don't like to quarrel with the chairman, but I believe that the question was posed to Mr. Chacey by the counsel previously to that. I think the record will show that, sir, because I have read it.

Mr. MAY. I think once again Congressman Wright asked the question.

General BESSON. To Mr. Chacey, who did not know anything about it. At any rate, this was the first time I had ever heard of this question. I have turned the Department of Army upside down to try to find out any verification of this fact. I have been unable to find it anyplace—we have made telephone calls all over the country to people who were in Korea. I have been unable to find any instance where anybody could substantiate this statement which Mr. Whilldin in his testimony stated he had heard of by hearsay. I have questioned Mr. Whilldin, too, on this question and have asked him to try to develop anything factual with respect to this and he was unable to do so.

Mr. SCHERER. You telephoned all around the country and turned the Army inside out?

General BESSON. Yes, sir.

Mr. SCHERER. We could have raised a lot of structures with that money.

General BESSON. This is a very serious allegation, sir, and I had previously stated to my knowledge we had never failed to move anything on time to meet military requirements so I felt that this was a serious challenge to my statement, and I wanted to exhaust every possibility of finding out whether there was any basis that I could find in fact for it.

Mr. WRIGHT. General Besson, it was not intended on my part as a challenge to your statement, nor as a challenge to the Army's ability, but rather as a question in an effort to get the truth regarding a rumor or report that had come to me.

It is not the disposition of this committee, certainly, to let stand in an indefinite state an unsupported allegation, and on a matter of this importance, I think we should have the truth about it. If it is not true, I think we should conclude that it is not true. On the other hand, if there is some such incident that has occurred in the past, I think the truth should be known.

General BESSON. Certainly, the truth should be borne out and I appreciate your point of view, but I can tell you I have honestly searched for anyone who was associated and should know and I could contact in the United States to find out whether it is true, at least 50 people who should have been knowledgeable about such an occurrence have been questioned and I can't believe in all honesty that that happened.

Mr. WRIGHT. Were any of these persons familiar with the report which had been circulated?

General BESSON. Two people said they thought that they had seen a picture of a tank on a railroad car and from that I believe, an impression was gained that it might have been a transportation problem.

In my own opinion, and looking through all the records, I believe that this had to do with the destruction of tanks in Korea which could not be evacuated to the rear at the time of our retreat in Korea and it was not a question of transportation of the tank; it was lack of moving power at that time.

Mr. SCHERER. Up to the Yalu River, they would not let you cross it, and there was not any vertical clearance to worry about there.

Mr. WRIGHT. General Besson, Mr. Whilldin had indicated not that this was definitely true but that he had heard the report and related in some detail what he had heard. I am wondering if you questioned him as to the source of his information?

General BESSON. I questioned him in great detail and I particularly enjoined him to do nothing except spend his time to try to find some substance for that hearsay report that he had. He was unable to do so, sir.

Mr. WRIGHT. I am going to ask, if there is no objection, unanimous consent that testimony in the body of this hearing relating to that matter, including the point at which I raised the question, be stricken from this record.

Mr. SCHERER. I object. I think we should let it in.

Mr. WRIGHT. Objection is heard. It will remain in the record and, if there are any who know the source of this rumor, I think it is well that we track down those who tell stories of this kind and bring them before this committee; for the most effective way to clarify unsupported charges is to get the whole truth out in the open and to let those who invent rumors know that it will come back to them. At this point, off the record.

(Discussion off the record.)

Mr. WRIGHT. Back on the record. Thank you for your forebearance with this interlude, Mr. Secretary.

Mr. May?

Mr. MAY. Mr. Secretary, when this restudy was assigned to you, did you meet with General Besson and Mr. Chacey regarding the matter?

Mr. MCGUIRE. I did.

Mr. MAY. What did you instruct them to do at that time?

Mr. MCGUIRE. I asked them to go back and reevaluate this matter and bring all the data together that they could on the subject. I asked them to get me various costs that were involved in this matter. I particularly asked the Air Force to evaluate this point of view and to get specific data on the sizes of some of these missiles we were talking about.

Mr. MAY. That was consistent with the instructions you had received earlier from General Randall? May we make that November 18 letter from General Randall exhibit 52, Mr. Chairman?

Mr. WRIGHT. Without objection, it is so ordered.

(The document referred to was marked "Exhibit 52" and follows:)

EXHIBIT 52

OFFICE OF THE SECRETARY OF DEFENSE,
Washington, D.C., November 18, 1959.

Memorandum for: Assistant Secretary of Defense McGuire.

Secretary McElroy has seen the attached letter from the Secretary of Commerce dated November 12 regarding the request of the Army Transportation Corps to increase the standards for vertical clearances for overpasses.

Mr. McElroy questions why this proposal should have been made without being reviewed at higher levels in the Department of Defense. He feels further that this requirement could be eliminated by conversation with the military departments, particularly the Air Force.

Mr. McElroy asked that you personally interest yourself in this problem and participate in a prompt draft reply for his signature to the Secretary of Commerce.

C. A. RANDALL,
Brigadier General, USMC (Retired),
Military Assistant.

Mr. MAY. We have had some testimony, Mr. Secretary, that two draft letters were prepared thereafter. Mr. Chacey collaborated in those draft letters. We have had testimony that related to 16 feet, and there was one related to 17 feet. There was a draft letter prepared, evidently for the Secretary of Commerce, and it requested a minimum vertical clearance standard of 17 feet and set forth the reason therefor. Was this draft letter prepared upon your instructions?

Mr. MCGUIRE. No, sir.

Mr. MAY. Do you know?

Mr. MCGUIRE. I think it was an endeavor on the part of my staff to formalize the situation as they saw it. I think there was some anticipation on their part that they didn't know what I was going to do and that I was going to make my own decisions and not necessarily take theirs.

Mr. MAY. So they drew up one letter justifying 17 feet, and another draft letter justifying 16 feet?

Mr. MCGUIRE. Yes.

Mr. MAY. Mr. Chairman, I would like to make a draft dated December 14, 1959, exhibit 53.

Mr. WRIGHT. Without objection, so ordered.

(The document referred to follows:)

EXHIBIT 53

DECEMBER 14, 1959.

The Honorable the SECRETARY OF COMMERCE.

DEAR MR. SECRETARY: Reference is made to your letter of November 12, 1959, and Secretary McElroy's interim reply of November 27, 1959, concerning Major General Besson's recommendation of October 1, 1959, that a minimum vertical clearance standard of 17 feet be adopted for the National System of Interstate and Defense Highways.

In accordance with procedures in effect since shortly after World War II, General Besson is responsible for advising the administrative head of the Bureau of Public Roads of the foreseen public highway needs of national defense once such needs have been coordinated within the Department of Defense. Consequently, General Besson's letter represented the official position of the Department of Defense.

The interest of the Department of Defense is entirely defense related. However, I am greatly concerned about the implication in your letter that the increased clearance has no potential value to the civilian economy. Actually, highway movements of military cargo directly benefit the civilian economy and the highway trust funds since, pursuant to national transportation policy, most such movements are made by commercial carriers paying highway user taxes. Further, commercial cargo capabilities should be significantly increased and traffic flow facilitated as a result of the increased clearance.

In response to an inquiry from the Public Works Committee of the House of Representatives as to which features of the Interstate System are chargeable to national defense, the American Association of State Highway Officials stated recently that the clearances of 17 feet might be justified from the viewpoint of the civilian economy. This statement concluded that "* * * we are unable to point definitely, at this time, to any sizable costs in building the Interstate System of Highways that are chargeable directly and solely to national defense." It is also significant that most of the States are already providing a vertical clearance of 15 to 16 feet to meet the needs of highway users.

In view of the above, I believe it is unwise to attempt to separate funding responsibility for such needs as the recommended 17-foot vertical clearance for highway transportation and the minimum 22-foot vertical clearance being provided for railroad transportation. Accordingly, I find no justification for considering any change in the established budgetary responsibility for Federal-aid highways.

I realize the increase in cost, though small in comparison with the total cost of the system, presents serious problems. However, considering the importance and long life expectancy of the system, I believe it to be in the public interest to insure an adequate standard for a feature of the system as critical to transportation as is the vertical clearance. If sufficient funds cannot be allocated to the construction of the system to the high uniform standards planned, I suggest that the more important routes be given first priority for completion within the 1972 time frame, leaving the remaining routes to be completed as rapidly as financing permits.

I wish to assure you of the continued cooperation of the Department of Defense, and I hope the views expressed above will assist you in reaching a favorable decision.

Sincerely yours,

_____.

Mr. MAY. That draft letter suggests a 17-foot standard.

You eventually received a letter from the Air Force dated December 7, 1959. Do you recall that, Mr. Secretary?

Mr. MCGUIRE. I am not sure. I presume we did, if you have a copy of it. Are you referring to the one from Hedlund, where he spelled out the ones about the various items for the Arnold Laboratory and so forth?

Mr. MAY. Yes.

Mr. MCGUIRE. Yes.

Mr. MAY. We have read the entire letter into the hearings previously and it has been made an exhibit, No. 39. We might make mention of the last paragraph, the letter from Colonel Hedlund representing the Chief of Staff of the Air Force. He says:

In view of the foregoing, a clearance criteria of 16 feet appears justified. To provide a factor for growth and allow for flexibility of future weapons systems, the Air Force *concurs that a clearance of 17 feet* as recommended by the Department of the Army is desirable. However, should the cost of providing increased clearance be too great, *the Air Force may be forced to accept* any transportability risk inherent in the lower height.

Mr. Secretary, does it appear that the Air Force Chief of Staff is willing to accept 16 feet as a figure that he can live with, but would desire more the 17-foot clearance and, if forced to take 16 feet, he will have to accept any transportability risk?

Mr. MCGUIRE. I think we ought to read the first part of this to get this in context. The first part says, "In view of the foregoing," referring to paragraphs 1, 2, and 3, "a clearance criteria of 16 feet appears justified."

Now, you could go on up and say 17 would be desirable, 18 is more desirable, 19 is more desirable, 20 is more desirable. But there is a reasonable limit involved in this matter and this was my problem to determine what was the reasonable area.

Mr. MAY. So it is the judgment of the Chief of Staff of the Air Force that 17 feet would be more desirable and would allow some leeway for future developments?

Mr. MCGUIRE. Yes, and I think possibly, if you asked him if 18 feet or 19 feet or 20 feet would be more desirable, he would give you the same answer.

Mr. MAY. But he expressed his desire for 17?

Mr. MCGUIRE. We had under discussion 17 or 16, if you will.

Mr. CRAMER. Mr. Secretary, in other words, you understood it, as was testified here previously, that the Air Force can only justify 16 feet, based upon present material and contemplated future development of material about which they had present knowledge, but as a possible safety factor, or escape valve, or whatever you want to call it, the one additional foot would give them that much more assurance. Isn't that the way you understood the letter?

Mr. MCGUIRE. Correct, but, also, I had to go back to a letter that was written, I guess really the same letter we are talking about, but it was my feeling in examining the past history of this thing, that the Air Force originally if someone said 16 feet, it would have been satisfied. Somebody came up with 17 and of course they were satisfied with 17. They were satisfied with 16.

Mr. CRAMER. As they would have been satisfied with 18, 19, or 20?

Mr. MCGUIRE. Now, I might add further, and this is not inconsistent with staff approach in the building, after receiving these letters I talked to General Schriever in that matter because there had been a lot of conversation concerning missiles in this field.

I think it was probably wrong to get involved on a specific point here. There are other areas as we all know on outsized movements and General Schriever agreed with my conclusions and had knowledge of this letter here, so I don't take it in the context of overruling the Air Force by any manner of means or disagreeing with the Chief of Staff there.

Mr. CRAMER. I want to say to you, Mr. Secretary, that I wish that the majority members of the committee, other than the acting chairman, were present to hear your explanation on what you based your judgment, because that seems to me to be the key to this whole question and I think it is unfortunate that only the acting chairman on the majority side is present to hear what you based your judgment on, Mr. Secretary, and as even the witnesses almost unanimously to date have said, it was a question of judgment, and you are now explaining to this committee the crux of the question, as I see it, on what did you base your judgment and was it a sound decision.

Mr. MCGUIRE. I would like to go a little further than that. I had to get all of the facts in this matter and I can talk to a lot of people in the Air Force concerning the future of missiles or a lot of people in the Army, Navy or in the Department of Defense.

There are really only two recognized people that I would take in this respect, who are working closely in this field and they would be the people in the missile development field.

They ought to know what is coming over the hill in this exercise. And I felt that candidly I didn't have that competency to interject that and use judgment of my own in that field. So I sought the advice of Dr. York and of General Schriever in this respect.

I didn't think it necessary to seek the advice of General Medaris or his successor, I believe someone else wase there at that point, because I took his letter in reply to General Besson to be negative in this respect.

Mr. BALDWIN. Mr. Chairman.

Mr. WRIGHT. Yes, Mr. Baldwin. At this point, Mr. Baldwin, may I interject this comment that while certain members of the subcommittee are not present right now, there have been throughout the hearings necessary absences on the part of various members of the subcommittee and this is to be regretted, I think. I was absent for a time yesterday.

I am seeking the transcript in order to read it and I think there will be interest on the part of both sides of the committee in reading, not only this testimony, but all of the testimony which has preceded it. I want to announce to the members of the committee that this testimony will be made available to all members of the committee.

Mr. CRAMER. Mr. Chairman, I wasn't criticizing any member for not being present, but I was just observing, as a courtesy to the Secretary, that I felt it was unfortunate that more members were not present to hear this crux of the whole question and be able to ask him questions. If they have any doubt about how he exercised his judgment, they would have an opportunity to clarify the matter in their own minds. That is the only reason I mention it.

Mr. BLATNIK. Mr. Baldwin?

Mr. BALDWIN. I would like to state to Mr. McGuire that the statement he made about the position of the Air Force is fully confirmed by testimony that we had 2 or 3 days ago in the hearing when Mr. Chacey stated when each one of the Departments were asked for the clearance they could live with or that they would require, that the notice that they got back from the Navy was the 14-foot level was adequate; and from the Air Force that the 16-foot level was adequate, so your conclusion is exactly in accordance with the testimony in the record.

Mr. SCHWENGEL. Mr. Chairman.

Mr. WRIGHT. Mr. Schwengel.

Mr. SCHWENGEL. I would like to ask Mr. McGuire if you were ever required by anybody to go to the Budget Bureau with this question?

Mr. MCGUIRE. In order to make my decision?

Mr. SCHWENGEL. Yes.

Mr. MCGUIRE. No. I was asked to give my decision on this matter. I didn't check with the Budget Bureau in this exercise.

Mr. WRIGHT. May I rephrase this question so that we can absolutely be clear about it, Mr. Secretary. Are you saying that the Budget Bureau was not at any time consulted in arriving at the decision which finally prevailed?

Mr. MCGUIRE. Mr. Wright, to my recollection, they were not.

Mr. WRIGHT. Thank you. Mr. Schwengel?

Mr. SCHWENGEL. That was going to be my next question, if they referred to counsel with any respect in regard to this matter. You just now answered my question they have not been consulted, to your knowledge?

Mr. MCGUIRE. That is right.

Mr. WRIGHT. Mr. May?

Mr. MAY. Mr. Secretary, you relied most thoroughly then on the views of Dr. York and General Schriever, is that true?

Mr. MCGUIRE. From the point of view of trying to determine their opinion as to the future size possibilities of missiles.

Mr. MAY. Dr. York testified before this committee yesterday, and I realize that it doesn't do to take things out of context and there was other testimony by Dr. York, but I would like to point out what he did have to say on one particular point.

He did say—

If the designers had a larger—had larger road clearances available this removes one of the constraints that they have to work under and it makes the design job easier. There is no telling what—there is no telling in what kind of equipment this might show up in the future. It might be a missile or it might be something we have not thought about at all, where a better job could be done if you could make it bigger. Removing design constraints always makes the designer's job easier, and vertical height is one design constraint.

Later Dr. York said—

I would like to say I do concur with the Deputy Secretary of Defense's statement that 16 feet looks like a good number, considering everything. From a research and engineering point of view, the higher the better.

Then I asked—

So, 17 feet proposed last October would look even better to you?

Dr. York said,

Yes. From a development point of view, the higher the better, and 17 is higher than 16. But that is just one of the many possible points of view here. I would not recommend 17 feet, or any other number solely because of the development problem.

It seems that——

Mr. MCGUIRE. Are you expecting me to answer?

Mr. MAY. I am just pointing that out.

Mr. MCGUIRE. I would like to comment as long as you have interjected this point. It seems to me Dr. York answered his own state-

ment. He said he would not recommend 17 feet in spite of all he said.

Mr. MAY. What Dr. York said to the committee was that, of course, 17 feet would be better than 16 feet from a designer's viewpoint.

Mr. MUMMA. Mr. Chairman, General Schriever said here yesterday afternoon—it is in the testimony—that the tendency was toward smaller missiles and your man, Chacey, he testified the same earlier in the week, that the tendency was toward smaller missiles. They get smaller before they get larger. He didn't mention what General Schriever said.

Mr. MCGUIRE. I hope some of them say they are going to get cheaper, too.

Mr. MAY. Speaking of General Schriever, who testified here yesterday, I might use the transcript in pointing out this portion of the testimony. I said to General Schriever: "If we were looking simply at the missile program, there would be no need to revise the standards upwards from 14 feet." General Schriever said, "That is right. I agree." Pardon me, Mr. Scherer said, "That is right. I agree." General Schriever said, "That is right."

I said, "So if the need exists, it exists for some other reason other than the missile program?" General Schriever said, "I think that is a fair statement."

What General Schriever testified to yesterday was that if you simply had the missile program to consider at this time, there would be no need to raise any structure throughout this country to a higher vertical clearance than 14 feet. So he said, "Therefore, if the need exists to raise the structures at all, it exists for some other reason."

Mr. SCHERER. Pardon me just a minute. He pointed out the other reasons were outside his field.

Mr. MAY. Yes.

Mr. MCGUIRE. I tried to point out, Mr. Counsel, earlier, that I think the missile thing as an example got into the illustration in this area, but I would also point out that the letter that the Air Force sent down, that you referred earlier, mentioned many of these outsized pieces and I presume we will have outsized pieces, I don't know, they could go 25, 30, 50 feet in this business. But they had a schedule in there, there is a reasonableness, there is a positiveness about these pieces that they are not missiles, that is the point you are making.

Mr. MAY. Yes. General Pachler of Operations testified yesterday that a vertical clearance was needed to take care of equipment which he needed and he was not at that time including missiles. And General Schriever and Dr. York testified that if the structures must be increased beyond 14 feet, to take care of these other items, items other than missiles, then when you are increasing the structures, the higher you make them, the more desirable it would be for designers of the future missiles systems.

Mr. MCGUIRE. We have some problems, I am sure, in radar dishes. This is one of the types of things we have to transport around, but in talking with the various people in the engineering group in this matter, I think they all agreed that this type of a piece of equipment is susceptible to being so designed it can be transported broken down, just as you transport a television mast. You don't transport a televi-

sion mast over 100 feet long. You transport it in sections and weld it together or put it together and erect it.

I think this is the case in point; we are doing this with many of our antennas right now.

Mr. CRAMER. You cite that as an example of a specific where you were advised that there might be some exceptions to the 16-foot minimum. So far as you are concerned, I assume you went into those that were brought to your attention and, as you did, in this instance, to see what the result would be as a basis of making your decision, did you not?

Mr. MCGUIRE. I tried to, yes.

Mr. CRAMER. As a matter of fact, Mr. Chacey testified to the effect that of 1,015 items that would be affected by a 14-foot minimum, there were only 31 of them that would be affected by a 16-foot minimum and they couldn't testify as to what portion of those 31 items would be affected by a 16 as compared to a 17-foot minimum. So I assume you went into those questions in making your decision?

Mr. MCGUIRE. We did. Discussions with the staff people.

Mr. WRIGHT. Mr. Chairman?

Mr. BLATNIK. Mr. Wright.

Mr. WRIGHT. Mr. Secretary, I believe you stated earlier that you first became aware of this vertical clearance problem sometime in October of 1959. Is that correct?

Mr. MCGUIRE. Well, I think actually I said that I became aware of this problem as a problem when I receive Colonel Randall's memorandum.

Mr. WRIGHT. November of 1959. Apparently at that time you had not been aware of the existence within the Department of the Army of the paper referred to by Mr. Whilldin in which the question of standards for military purposes on the highway system was raised as early as 1955. You were not at that time personally aware of that?

Mr. MCGUIRE. Not to my knowledge.

Mr. WRIGHT. At that time you were not aware either of the letter which had been written by General Yount, January of 1957, in which he raised a question at that time?

Mr. MCGUIRE. No. I think if I had been aware of it in January 1957, candidly, I probably wouldn't even have understood the import. I had just been sworn into office and I was trying to find out what it was all about.

Mr. WRIGHT. So the vertical clearance problem as such did not come to your personal attention until November 1959?

Mr. MCGUIRE. I think that is a correct statement.

Mr. WRIGHT. Upon your receipt of the letter from General Randall in which he attempted to convey to you the wishes of Secretary McElroy?

Mr. MCGUIRE. Yes.

Mr. WRIGHT. Subsequent to that, and prior to your announcement of the 16-foot decision, didn't you have a conversation with Secretary McElroy concerning this problem?

Mr. MCGUIRE. Mr. Wright, I can't answer that point. As you know, Neil was leaving about that time, so I won't say "Yes" or "No" to that from the point of saying that I may have been handling this thing and I thought we were coming along on it. But, going to him

and asking him what he wanted me to do on it, I had no such conversation.

Mr. WRIGHT. Did you have any conversations along that line with General Randall, enough to ascertain what they expected you to do?

Mr. MCGUIRE. I wouldn't expect General Randall to give me that kind of an instruction. I haven't had any such as that yet.

Mr. WRIGHT. You assumed it was your responsibility and that it had been placed wholly in your lap by the receipt of this letter, and you proceeded to solve it as best as you could?

Mr. MCGUIRE. Right.

Mr. WRIGHT. In arriving at your decision, which finally was announced I believe in January of this year, you have testified——

Mr. MCGUIRE. I don't know what you mean by "announced," Mr. Congressman. I sent a copy of my letter to Mr. May, because I told him that I would be glad to give him all of the action on this thing and try to be helpful. I suppose this is an announcement.

Mr. WRIGHT. Right. Therefore, between the dates of November 18 and December 21, a period of about a month, you resolved this question to your own satisfaction?

Mr. MCGUIRE. Well, you went off the record. I would like to go off the record, if I may, with your permission.

Mr. WRIGHT. Surely.

Mr. BLATNIK. Yes.

(Discussion off the record.)

Mr. WRIGHT. During this time you consulted General Schriever and Dr. York and I believe you have testified, primarily with regard to missiles. Did you regard this essentially as a problem of transporting missiles at that time?

Mr. MCGUIRE. No. I became aware that, to consider this as a problem of transporting missiles, was only one facet of this business. There are many facets involved in this business.

Mr. WRIGHT. So you consulted with other members and representatives of the Department of the Army, and in regard to their other oversized commodities that might need transportation as well?

Mr. MCGUIRE. I talked with General Besson in this matter, whom I considered to be very well informed in this field.

Mr. WRIGHT. If I might just pursue this a minute, Mr. Chairman, were you aware at that time of the standards that had been written into the 1956 Highway Act which placed upon the Bureau of Public Roads the responsibility of consulting with the Department of Defense to ascertain standards adequate for the anticipated need for the year 1975? Were you aware of this?

Mr. MCGUIRE. I am not an expert in the technology of the law, Mr. Congressman. I don't mean to evade your question, but I would like to put it in context. I did my best to acquaint myself with the background of this thing as far as I could. And it was my understanding that we had this law passed in 1956, that we had concurred or rather we had agreed that the position of 14 feet at that time was right. I think the records that I have been able to see bring that out. Now, as to when Chacey talked with Siegle, or something like that, I don't know.

Mr. WRIGHT. Are you certain that the Department of Defense was consulted in 1956 at the time of the establishment of those standards?

Mr. McGUIRE. No, I am not.

Mr. WRIGHT. This was merely an impression with you that it had been?

Mr. McGUIRE. Well, all I know is that our people, the standard was told to me to be 14 feet, and our people told me they had agreed with this standard, which I think they did on—I am not sure of the date exactly.

Mr. SCHERER. They did a year later, 1957?

Mr. WRIGHT. A year following the adoption of the standard, I see. As a part of your decision that 16 feet would be the correct supportable minimum height, did you take into account the report that a number of States were already building at that standard and that therefore——

Mr. McGUIRE. Yes, sir; I did. I asked this question: What is the criteria, what is the pattern around the country? This seemed to me to be a pretty good business question to ask.

Mr. WRIGHT. Did you gain the impression from that report that a number of the States were already building at 16 feet, and that, therefore, this might be a pretty good level to arrive at without causing any more disruption than necessary?

Mr. McGUIRE. It seemed to me from our point in defense, one of the things purely aside from what height this business was at, that we had a standard that was uniform and that we could meet. I must say that this was something that I gave consideration to. And my understanding was that a number of the States were at 16 feet and a number at 14 feet and in varying degrees in between there and varying degrees down through the 14 feet.

Mr. WRIGHT. Based on this information and these discussions the decision to recommend 16 feet rather than 17 feet was yours?

Mr. McGUIRE. Based on that information and the other information that we have been talking about in this respect.

Mr. CRAMER. Mr. Chairman, may I ask a question?

Mr. WRIGHT. Would you refer to the fact sheet which was presented to you in relation to this question of the States building at 16-foot standards—on page 2 of that fact sheet, if you have it before you, Mr. Secretary.

Mr. McGUIRE. Do you mind, just 1 minute. On page 2, did you say?

Mr. WRIGHT. Page 2, figure 9, near the top of the page.

Mr. McGUIRE. Yes, sir.

Mr. WRIGHT. You did receive this fact sheet and consider it in the making of your decision?

Mr. McGUIRE. I asked the question before I got the fact sheet to get these points out. It seemed to me one of the problems I had before me in reevaluating this thing was to find out what was going on.

Mr. WRIGHT. This is one of the bases upon which you tried to get all of the information consolidated?

Mr. McGUIRE. Try to get a picture and using this as one of the bases.

Mr. WRIGHT. Figure 9—

Presently one-third of the States are providing vertical clearances on their portion of the National System of Interstate and Defense Highways at 16 feet or more and two-thirds are providing 15 feet or more.

Did you rely upon that as authoritative?

Mr. McGUIRE. Yes, sir. I asked where it came from and they told me from the Bureau of Public Roads.

Mr. WRIGHT. No. 11——

Mr. McGUIRE. I might add this to that comment. I am not sure when I asked where this came from, but when you get into the business that I am in, every once in a while you begin to just challenge everything that is put in front of you and ask questions about it.

Mr. WRIGHT. Of course, and that is what we are in the process of doing here.

Mr. McGUIRE. I appreciate that.

Mr. WRIGHT. Figure 11 states the following conclusions:

Nation System of Interstate and Defense Highway structures over railroads provide a vertical clearance of 22 feet, but lower old structures and limited horizontal clearances prohibited rail movement of many outsized items.

Did you rely upon this——

Mr. McGUIRE. No, I did not.

Mr. WRIGHT. You did not rely upon this conclusion as authoritative?

Mr. McGUIRE. I saw no reason, Mr. Wright, candidly.

Mr. WRIGHT. You thought it had no direct bearing?

Mr. McGUIRE. The military themselves in review of this point, had previously not raised this as a basic problem in the matter. It seems to me, if it had great merit in the area, they would have certainly taken this into consideration.

Mr. WRIGHT. But figure 9, regarding the States——

Mr. JONES. In other words, you thought it had no comparative values?

Mr. McGUIRE. It may have had a comparative value, but I was pretty sure, as a relative weight factor in this problem, it did not have enough importance in the past to become evident, so I did not challenge this point.

Mr. WRIGHT. Mr. Secretary, you have stated that you did rely upon this figure nine as authoritative and that it was one of the things to which you gave some weight in arriving at your decision.

Mr. McGUIRE. Unquestionably.

Mr. WRIGHT. I don't know how closely you may have followed the course of these hearings, but this gave you the impression, I suppose, that it gives me upon reading it but we have subsequently had testimony to the effect that this is somewhat inaccurate and that not one-third of the States are providing a vertical clearance of 16 feet and more, but something like six States only, and that it is not accurate either to infer that two-thirds of the States provide nothing less than 15 feet. But that was the impression you gained from this, was it not?

Mr. McGUIRE. Correct.

Mr. BALDWIN. If the gentleman will yield.

Mr. WRIGHT. Yes; I yield.

Mr. BALDWIN. The point you are making, Mr. Wright, is when the later facts were known, even fewer States were requiring 16 feet clearance. That would just bring out that the decision was more liberal than that might have even indicated, in the sense that there were fewer States requiring 16 feet when the facts brought it out than had been earlier indicated.

Mr. WRIGHT. I am not quite certain that I follow the reasoning of the gentleman. I am not certain that it is in point with what I was trying to develop, in any event. I am trying to determine the completeness and accuracy of the information upon which Secretary McGuire based his decision. But I think that concludes my questions.

Mr. CRAMER. Mr. Secretary, your overriding consideration in reviewing all these memorandums was how it affected defense, was it not?

Mr. MCGUIRE. Yes, sir.

Mr. CRAMER. And Defense said that 16 feet was justified; 17 feet would be nice to have. Now, in making this decision, I assume you came to the conclusion that 16 feet would not in any way impair the defense of our Nation, missilewise or otherwise, did you not? Did you not have to come to that conclusion?

Mr. MCGUIRE. I certainly did, and I would be foolish if I hadn't come to that conclusion. In other words, I could not have arrived where I did without that.

Mr. CRAMER. Wasn't that the overriding consideration of all these other factors in the memorandums you got?

Mr. MCGUIRE. It seems to me it would be.

Mr. CRAMER. Wasn't it when you made your decision?

Mr. MCGUIRE. I am trying to say I could not on the basis of defense make a decision which would be inconsistent with the basic problem we have of supplying this capability, so I think I am answering your question; yes.

Mr. SCHWENGEL. Mr. Chairman, I would like to direct a question to the Secretary.

Mr. BLATNIK. Mr. Schwengel.

Mr. SCHWENGEL. Mr. Secretary, assuming that this country should become a theater of military operations, which none of us wants to see, the movement of material would become a military operation entirely, would it not?

Mr. MCGUIRE. Well, I would say yes and no to that. There are also certain problems with the civilian economy that we will be taking care of which also, although not my responsibility, do come into the defense facet of this country.

Mr. SCHWENGEL. That would have a direct bearing on defense?

Mr. MCGUIRE. Yes.

Mr. SCHWENGEL. It would be total war as far as this country is concerned. Now, in many instances then, it would not adhere to highways in its movement, that is, move across the country and you have other plans in this regard under consideration by defense now?

Mr. MCGUIRE. I am not quite sure I follow your question. Could I just rephrase it to be sure I have it correctly? Are you saying that, besides the road programs, we would have other means?

Mr. SCHWENGEL. Other modes of transportation?

Mr. MCGUIRE. I suspect we would have a lot of tanks going over cornfields if we ever got into that situation.

Mr. SCHWENGEL. Further, many of the structures we are worried about might not be in being at all.

Mr. MCGUIRE. Certainly if this country is attacked, one of the things that an enemy seeks to do is not only to pinpoint the military operations, but the capability not only of the military, but of the economy

to move around; and to destroy this. In that process, I am very sure that we would have damage to buildings, bridges, roads, anything.

Mr. SCHWENGEL. Therefore, it is absolutely necessary that you make plans for other modes of transportation.

Mr. MCGUIRE. That is correct.

Mr. SCHWENGEL. To move materiel?

Mr. MCGUIRE. We would have to make the best use of what we have left and, very candidly, I suspect if we had a very serious attack some of them wouldn't be much to our liking, but this is how you have to fight a war. You don't choose your battleground and don't choose the conditions. You have to get in there and acclimate yourself to what you have and fight it.

I think that is correct if you are a general. I am not a general.

Mr. MAY. Mr. Secretary, when did you forward your letter to the Secretary of Commerce recommending the 16-foot standard be adopted?

Mr. MCGUIRE. I think you said it was on the 21st of December.

Mr. MAY. Do you have the date there?

Mr. MCGUIRE Yes, sir. December 21.

Mr. MAY. When did you receive a reply to your inquiry to General Schriever?

Mr. MCGUIRE. I think you have a copy of the letter, Mr. Counsel. Could you help me with the date on it?

Mr. MAY. Yes; the copy I have is dated December 23.

Mr. MCGUIRE. He had talked to me on the phone and he had given me his position before I released it, and I was leaving town and was very anxious to fulfill my understanding with you and to get this matter over to you.

Mr. MAY. Did he concur on the telephone in your proposal to request a 16-foot vertical clearance?

Mr. MCGUIRE. Let me just get the letter out and I will give you the context of that, if I may. I think the last paragraph of his letter says:

Therefore, as I indicated to you by phone, I concur in the conclusions and recommendations in your proposed letter to the Secretary of Commerce.

I had sent this matter to him to review. It was a matter I would hope I would not be criticized for trying to speed up this thing rather than waiting for a formal document to arrive, to discuss it with him as to what his position was.

Mr. MAY. Also, General Schriever in his reply pointed out, and he adds another sentence and says,

I agree with the Director of Transportation, Headquarters, U.S. Air Force, that we should provide a growth factor to accommodate future weapons systems.

Mr. MCGUIRE. The only thing I can say to that, Mr. Counsel, is he said he concurred with my conclusions and recommendations. He also says he agreed with the other fellow and says he would like a little higher safety factor.

Mr. MAY. As did Dr. York. They concurred in 16, but thought that 17 feet would be better.

Mr. MCGUIRE. Somebody has to make some decision here someplace and not keep climbing up the line. That is the position I am in.

Mr. JONES. You had a recommendation also from General Medaris that was furnished to the committee with regard to the misile program that he could get by with 14 feet, or 14½ feet.

Mr. MCGUIRE. I had the complication of General Medaris in this matter, that he was not dealing with the other type of missiles.

Mr. JONES. I understand.

Mr. MCGUIRE. That is correct. I think I mentioned that before.

Mr. MAY. The fact sheet prepared by Mr. Chacey on page 3, on policy, paragraph 2, says:

> Considering the life expectancy of the National System of Interstate and Defense Highways extends through the next half century, it would be wise to provide a 17-foot clearance against future defense needs, particularly when we are already able to demonstrate a need for 16 feet and when over two-thirds of the States are already providing 15 feet or more based primarily on needs of the civil economy.

So once again General Besson has suggested that it would be wise to provide 17 feet to take care of possible future defense needs.

Mr. MCGUIRE. Well, whether this was General Besson's opinion, or Chacey's opinion, I don't know. It was an opinion on this matter, very obviously. I would point out to you, having had this fact sheet and having had a lot of discussions on this matter, I asked General Besson about 16 feet, and his reaction on this was that they could live with this satisfactorily.

Mr. MAY. We have had testimony that Major General Pachler, Director of Operations, on December 15, 1959, in relation to this problem stated in his letter as follows, and I quote:

> This Office holds to the view that a 17-foot minimum clearance standard for the National System of Interstate and Defense Highways would be desirable in order to provide a reasonable leeway for future requirements and to insure unrestricted movements of military hardware over the National System of Interstate and Defense Highways in the event of national emergency.

He goes on to say, and I quote:

> The 17-foot standard provides a 1-foot safety or growth factor over and above the presently known requirements of the service. In view of the overall growth of the National System of Interstate and Defense Highways, with the projectsd life of 50 to 75 years, all things being equal it appears inappropriate to consider only presently foreseen requirements in establishing standards for its design. However, this 1-foot growth factor could be sacrificed, if necessary, for economy reasons without impairing the movement of the equipment presently in the hands of the service.

So, thus far we have heard that the Air Force concurred in 16 feet, but said that if they did not get 17 feet, they would have to accept the risk involved. We have heard that the Army holds to 17 feet, but they say that 1-foot growth factor could be sacrificed for economy reasons. The fact sheet prepared by Mr. Chacey points out that 17 feet would allow a growth factor.

General Schriever indicated that 17 feet would provide a little more leeway for the designers, as did Dr. York.

Mr. Secretary, did you arrive at your conclusion to recommend 16 feet due to the lesser cost that 16 feet would incur?

Mr. MCGUIRE. Not entirely; no; it had a consideration. Any one of the taxpayers looking at these situations must recognize that there is a cost involved here. I happen to be a taxpayer, too, although I get some income from the Government.

Mr. CRAMER. He already stated the overriding consideration in the whole matter was the defense of the country.

Mr. MAY. Yes. We have just heard from the various branches of the military, and their opinions and judgments in the matter.

Mr. MCGUIRE. If I could mention this, Mr. Counsel, it seems to me that in summation of these points, that from my point of view and in my judgment the foot between 16 and 17 was a matter of relativity of desire—what they would like to have—but that they pretty well convinced me, at any rate, so I felt in my judgment that 16 feet would adequately serve their purpose on it. Now I can take a position also, "Well, let's throw in another foot here just to be sure we are right on this thing," but I would not solve a lot of problems which might come on in this thing admittedly. We all recognize this. We were looking into the future this last fall, as Dr. York and some other people pointed out.

In my judgment, in spite of this 17-foot business that you have mentioned, I felt that 16 feet was a reasonable height, and in discussing it with the military on that basis I had nobody who told me they were going to go out of business. I think that is a pretty good criterion.

Mr. BALDWIN. If I might make a comment at that point, Mr. Chairman. Mr. Secretary, to the best of my recollection there has not been a single witness who has come before us in this whole series of hearings who said that actually he had a provable requirement of more than 16 feet.

Mr. MCGUIRE. We have a couple of items of 17 feet, but the military normally will always have some items above this thing and, of course, as you go higher they become fewer and fewer as far as I can see in the future.

Mr. SCHERER. For that reason, Mr. Secretary, could you furnish for the record the number of movements, let us say, in the past 10 years which the Defense Department has offered highway carriers that were rejected because they could not move them?

Mr. JONES. I am going to object to that because it places the Secretary in an impossible situation, facing him with a task that would serve no useful purpose. I do not see why the Secretary should have it imposed upon him to catalog every military movement, the result of which would not add to this hearing one iota.

Mr. SCHERER. I think that is the purpose of the hearings.

Mr. MCGUIRE. Maybe I can save some time here.

Mr. SCHERER. Wait a minute. All I have asked for is—we have asked for dozens and dozens of statistics to be furnished in this record.

Mr. JONES. The Secretary's opinion is based on what he has explained as a good foundation for his position. Why should we put the Secretary to the task to have his people over there work out every military operation that might involve a question of 16, or 14, or 12 feet. I see no reason for that.

Mr. SCHERER. You didn't even let me finish my question. My question isn't in the record.

Mr. JONES. Yes. I am objecting to that line of examination because if it contributed anything it would mean the members would obtain some knowledge but I do not see why we should put him on a fishing expedition.

Mr. SCHERER. This is not a fishing expedition. This is the crux of this investigation, Mr. Jones. How many movements have been rejected by commercial carriers because they couldn't move them because they were oversized?

Mr. JONES. How in the world could the Secretary or General Besson over here go through every record of transportation in order to make that determination?

Mr. SCHERER. We have had statistics on this subject already. These figures are available.

Mr. JONES. This witness, the Secretary, has testified on the opinion which became the substance——

Mr. SCHERER. I know what he is testifying to here. I am asking for some information.

Mr. JONES. Mr. Chairman, I think we ought to rule it out as irrelevant.

Mr. SCHERER. If we get it it might stick a pin in some of these things you are trying to prove.

Mr. JONES. I am not trying to prove anything.

Mr. SCHERER. I didn't say you particularly.

Mr. JONES. I just want to get the facts.

Mr. BLATNIK. The inquiry is directed not to the future, but what they have been able to carry on old roads that existed prior to the Interstate System. We want to know, can these oversized and large pieces of essential military equipment be conveyed rapidly and expeditiously so as to be effective for combat utilization on the Interstate and Defense Highway System?

Mr. SCHERER. The request for this information goes to the very heart of the investigation. I want to know if any request from the Defense Department to move an oversize item has been denied by a commercial carrier because they could not carry it due to vertical clearances. I only heard of one.

Mr. JONES. General Besson here would have to take a stamp and run through every consignment he has made over the past few years to make a determination of that.

Mr. SCHERER. No. There are records available.

Mr. BLATNIK. Let the Chair ask the General what would be the problem in trying to go back into these individual shipments? Mr. Chacey testified here earlier it would be most difficult to run down each one.

General BESSON. As I understand the question, and maybe I misunderstand it, but my understanding is you want to know what military movements we have been unable to make.

There have been instances where certainly some one carrier has not been able to make a move, but there are no moves that have been requested that we have been unable to make over the years—and I am certain I would know about this—in one way or another with a certain amount of difficulty. But we have been able to make it, so the actual response is that there are no moves.

Mr. JONES. I did not understand the question to be that. The information he wanted was the consignments that could not be made by highway transportation.

Mr. SCHERER. I got what I wanted. I withdraw my request.

Mr. JONES. Why didn't you ask that question in the first place?

Mr. SCHERER. I suggest that I did ask the question.

Mr. JONES. I withdraw my objection and ask it be stricken from the record henceforth and forever.

Mr. BLATNIK. It is so ordered. Mr. Secretary, what disturbs me is we are leaning so heavily, almost completely, on past experience in determining future changes which occur so rapidly. Are you satisfied that the 16-foot clearance will meet our military needs for the next 10 and perhaps 15 years?

Mr. MCGUIRE. As far as I have been able to determine it, this recommendation that we made of 16 feet is a sound one, sir. I would not have made it unless I thought so.

Mr. BLATNIK. You are satisfied that 16 feet will accommodate our present needs and the foreseeable future needs, in your opinion. Is that correct?

Mr. MCGUIRE. I would think so, sir. From what you have brought out in your committee where they had these varying degrees, or let us call it some confusion that you touched on as to what the standards are, I would gather 16 feet is the minimum now, we know specifically in the design factors, and the other problems we face in the movements——

Mr. BLATIK. It is the rock bottom minimum. Does that provide for future growth and flexibility?

Mr. MCGUIRE. As I see it, it does.

Mr. BLATNIK. And one which gives a cushion that responsible military people and other agencies feel they should have?

Mr. MCGUIRE. I think I checked into this with all of the people I thought could be of assistance to me and who were knowledgeable, and it was the conclusion that we came to, sir.

Mr. BLATNIK. Are there any further questions? Mr. May?

Mr. MAY. No questions.

Mr. BLATNIK. Any further questions?

(No response.)

Mr. BLATNIK. Thank you very much.

Mr. MCGUIRE. Thank you very much, Mr. Chairman. I appreciate the opportunity to be here.

Mr. BLATNIK. I thank the Secretary for coming here. The Chair has a statement to read, but first a brief request. The Association of American Railroads asked to be permitted, in view of the fact that references have been made to what equipment has been transported in the past 4 years—they have asked for an opportunity to be heard, or at least to be permitted to file a statement. Without objection of the members we will say this: We will look over the statement and the committee will decide whether we can, in whole or in part, properly include it. I think it is fair to do it, since references have been made. We have had a commercial trucking firm testify to what difficulty they have had with equipment, and so forth, which reservations, so with tentative approval the Chair will hold it up subject to further approval.

Mr. MUMMA. That's right. I am in favor of that.

(The statement referred to appears in appendix on p. 428.)

Mr. BLATNIK. The Chair has a statement of his own, and copies have been made available. I will not ask to read it at this late hour, as it will take some time, but if you will look it over, it summarizes

what the Chair sees was accomplished in view of the early intentions for these hearings.

If there is no objection, I would like to include the statement at the conclusion of the hearings, at this point in the record.

Mr. CRAMER. Is it a statement of the chairman's own personal conclusions and not the opinion of the committee?

Mr. BLATNIK. It is a statement of the Chair's own personal conclusions as to what the objectives were, and what the facts have so far brought out. The conclusions, of course, are reserved completely for the majority of the whole committee.

Mr. SCHERER. I think any member has a right to make a statement but I want to know if the statement was prepared before we heard the testimony of the Secretary. I thought that his was the most important testimony here. He is the man who made the decision you are complaining about. But go ahead.

Mr. JONES. Mr. Chairman, it is a prerogative of the chairman to make any statement he sees fit. I see no reason to question the right of the chairman to make a statement, or the right of the majority or minority to take exceptions, or to file dissenting views, and so on. So that would not be anything new.

Mr. SCHERER. I said I think he or any other member has the right to make a statement.

Mr. BLATNIK. The Chair will not insist on it.

Mr. SCHERER. I am not objecting.

Mr. BLATNIK. If there is no objection, the Chair will include his statement in the record.

Mr. SCHERER. Go ahead and read it.

Mr. BLATNIK. Read it?

Mr. SCHERER. I just wanted to point out the timing of the statement.

Mr. BLATNIK. You will remember that at the outset of these hearings I said that Congress needs to know these things:

1. Is there a desirable degree of flexibility in the 1956 concept of the role of the Interstate System as an important adjunct to the Nation's defense?

2. Are the responsible agencies of the Government, both military and civilian, engaging in the degree of coordination in planning that the exigencies of current and future situations demand?

3. Are the approaches to present and future requirements characterized by any shortsightedness in provision for conditions expected to prevail?

4. Is the Interstate System being geared to an emphasis on mobility that transcends anything we have known in the past?

The capability for rapid movement is the arch of our present defense position. Strategic forces are in being (1) to reinforce our limited oversea forces; or (2) to deploy to the undefended areas of the world when aggression threatens; or (3) to defend the North American Continent itself. Although it has yet to occur in modern times, the third premise is one that always has to be considered.

The military has always been compelled to consider size and weight and ground support equipment in terms of available transport.

We must have the capacity to move weapons and the troops who serve them, and who need them at once when it is a matter of life and death, and very possibly a matter of national survival.

In the employment of weapons systems the major and decisive influence is transportability. If there is difficulty in moving a weapon and its related equipment to the point of utilization its combat power is correspondingly curtailed.

In the development and production of weapons systems there is a great urgency for timely delivery and minimum in-transit time. Military authorities tell us that delay has drastic effects upon research and development programs.

Now when we weigh all of these factors in the light of the testimony before us, what do we find?

The record discloses these undisputed facts:

1. Army staff studies were made in 1952 and again in 1955 in the Office of the Chief of Transportation, Department of the Army, which showed that the military services were designing, procuring, and had in stock thousands of items of excessive dimensions and weight; that there had been a tendency on the part of military planners to use experience of the past for current and future planning; that from the transportation aspect this type of planning was no longer practical, and that another war would be one of quick movement demanding fluid supply lines.

2. Army technical manuals reflected in 1953, 1954, and 1956 that the current ordnance inventory contained weapons which, when loaded on a transporter, varied in height from 13 feet 6½ inches, to 15 feet one-half inch. The Corps of Engineers, the Navy, and the Air Force all had essential items exceeding 14 feet.

3. The configuration of the Atlas missile was known in 1954. The difficulties in moving it by highway from California to Cape Canaveral were known in 1956. The witness, Mr. Leonard, testified that nobody in the Department of Defense ever bothered to learn from him what difficulties he was experiencing.

4. The act of 1956 specified that the standards for the Interstate System were to be adequate to accommodate the types and volumes of traffic forecast for the year 1975. When the standards fixed the minimum vertical clearance at 14 feet the Department of Defense was not consulted. But neither did the Department of Defense make any effort to alert the Bureau of Public Roads or the American Association of State Highway Officials to the fact that the 14-foot standard would seriously impair the ability of the military to move expeditiously with the oversized items then known to be in the ordnance inventory.

The 14-foot standard was officially adopted on July 17, 1956. The testimony shows that the issue as to its adequacy for military movements was not raised until 6 months later. Thereafter there occurred a classic example of bureaucratic indecision.

From July 17, 1956, to January 27, 1960, when the standard was finally raised from 14 to 16 feet, the total elapsed time was 3 years, 6 months, and 10 days, during which over 2,000 affected bridges or structures were built. This was unconscionable, incredible, inexcusable and indefensible delay.

During these hearings we have been told of a great number of estimates of cost. It does not matter much which set of figures is applied; the plain fact of the matter is that this delay, this incredible delay, has cost millions and millions of dollars.

It is to be remembered in this connection that you will still have uncorrected a gigantic obstacle course of thousands of substandard underpasses which will continue to strangle the mobility of military units which may, in the future, be trying to make their way across those stretches of the system.

During these hearings we have tried, to the best of our ability, to ascertain the responsibility for all of this vacillation, procrastination, and indecision.

The record is clear that months elapsed between requests for advice and the replies thereto in the Department of Defense, more months were spent in trying to resolve different positions, and that it even took months to arrange for a meeting between the Chief of the Office of Transportation of the Army and the Federal Highway Administrator.

If this is typical of Pentagon operations then it is high time that somebody should get busy and clean out these channels so that decisions in matters as important as the one now before us can be made in much less than the 3 years this one took.

In conclusion, I want to point out one other significant factor. Before the Secretary of Commerce finally made his decision to fix the 16-foot standard, he asked for the advice of the Secretary of Defense from both policy and budgetary points of view because—

any substantial cost increase which is entirely defense related will certainly raise in the minds of the Congress and the highway user groups the question of charging this cost to national defense budgets or otherwise from general appropriations.

For the information of the Secretary of Commerce, it already has.

Mr. BALDWIN. Mr. Chairman, may I make one observation? I notice the statement includes the word, "incredible." I would like to say it seems incredible to me that a four-page mimeographed statement at the conclusion of the hearings should be available to be read 2 minutes after the last and most important witness completed his testimony.

Mr. SCHERER. The statement was obviously dictated by the staff yesterday. The only thing I have to say is that this is a political finding in an election year and, as I have said before, it was obviously prepared yesterday before the two most important witnesses were heard.

Mr. MUMMA. Mr. Chairman, may I make an observation. Here on one of these pages it says—

The witness, Mr. Leonard, testified that nobody in the Department of Defense ever bothered to learn from him what difficulties he was experiencing.

I think General Schriever—I believe it was he—testified yesterday that the Defense Department, or his R. & D. people, went all over this route, and one of the questions I wanted to ask at that time but did not was, was that in conjunction with Leonard or absolutely independent of Leonard.

Mr. BLATNIK. Mr. Mumma, you will recall, and the record will show, at that point I asked Mr. Leonard a question. First I asked the Defense people what difficulties were encountered in the movement of these oversize pieces of equipment, and they were not too aware of any specific difficulties. We were told most of these were hauled by commercial transporters. Then I asked Mr. Leonard during his testimony, as the record will show, after he had told the story to the

whole committee and showed the pictures of the difficulties of all types that they are having with all the different types of equipment in different parts of the country—I asked him didn't the Defense Department know about that, and he said no, he had not talked to them, except he had maybe casually mentioned it to them.

Mr. MUMMA. Then he is at variance with what Schriever said yesterday that they made a trial run of the whole deal. They talk about how slow this impediment was raised. Schriever or Leonard also made the statement that it took 9 days to cover and it was 2,700 miles. I have had a lot of experience with trucks, and I will tell you, 300 miles in a day is not poking along for a truck. That is very fast I would say.

Mr. SCHWENGEL. I would like to ask the chairman whether or not this was prepared before the two principal witnesses here today had been heard.

Mr. BLATNIK. This was prepared in the majority after the completion of yesterday's testimony, and part of it this morning and this afternoon reviewing and discussing all of the testimony already presented before us. The two principal witnesses here did not change any of the basic facts in the record.

Mr. BALDWIN. Then could I ask a question on that point? Why did we have the hearings today? Why did the chairman call the members of the committee together and have them come over when we have other duties, if it was prepared prior to this?

Mr. BLATNIK. Because we wanted to try to find out on the basis of what had transpired over these 3 years and 6 months and 10 days, whose responsibility it was when we knew, and the information was not given to us. We are trying to find out whose responsibility it was that the decision had not been made.

Mr. BALDWIN. It seems to me you are calling witnesses over from the Bureau of Public Roads and from the Defense Department and taking them away from their activities today and you are announcing a conclusion you made at the end of yesterday's hearing. If there is delay in the operation of the Bureau of Public Roads and the Defense Department today it can be only attributed to having an unnecessary hearing, as long as the statement was announced on the basis of conclusions made yesterday.

Mr. BLATNIK. In view of the explanation here today I still stick to my statement and repeat this is an incredible procedure. I asked several times, is this typical of the machinery at work primarily in the Defense Department and the line of communications and channels, both vertically and horizontally.

Mr. BALDWIN. Can I ask, is this going to be typical of the hearings of this committee, that the conclusions of the chairman are going to be announced based on mimeographed statements made before the hearings are completed?

Mr. BLATNIK. I am not going to engage in any debate. I announced politely I had a statement. I did not want to impose on the time of the committee to take up their time to read it. We had stayed here to accommodate the distinguished witnesses and a gentleman who has to leave. After the conclusion of their testimony I said at that time I would like to put my statement in the record. I am not imposing on anyone and I am not insisting on it; and it is not going

to be typical, and I personally resent implications that there is any intention of doing that in this specific instance, or that I am trying to make this a precedent for future hearings.

Mr. BALDWIN. The record is already here, Mr. Chairman. It is the record that the chairman has made.

Mr. BLATNIK. If the gentleman will object to the statement I will ask that the statement be stricken from the record.

Mr. CRAMER. May I suggest, Mr. Chairman, that I thought the objective of these hearings was to decide whether, (1) there was an unreasonable delay, and (2) what the cost to the taxpayers might be of that delay, and (3) the question is was the judgment exercised in deciding on 16 feet rather than 17 feet contrary to the best interests of the defense of this Nation.

Two people, Mr. Tallamy and Mr. McGuire, are the ones who principally had the responsibility for making those decisions and they are the ones who were asked to come before this committee to state the justification and the reasons for their final determination and yet your statement was drafted before they were even heard. It was drafted yesterday.

I think it is inexcusable that their testimony should be completely ignored in the chairman's statement of his conclusions of what the hearings have shown, because the basic question in the whole hearing was: was the judgment of the Secretary logical, reasonable and in the best interests of the defense of our country? The Secretary said his primary concern and the overriding consideration he had was the defense of our Nation and not crippling the missile program. He said it categorically. He showed the reason why he made the decision.

He had all of the information before him that this committee brought out to light, at the time that decision was made; and he said, "in my opinion the defense of this Nation is not being hampered in any way by making a 16-foot rather than a 17-foot clearance decision, and my overriding consideration was the defense of the nation."

Mr. Tallamy said he did in his department what he had been doing on the 14-foot clearance until he was given the instructions to permit a 16-foot clearance by the Secretary of Commerce, who is the only person who could give him that authority to do so.

It seems to me it is inexcusable that the conclusions you suggest before this committee will go out across this country and the people of this country will have the opinion that this is the conclusion of this committee—even though you stated that it is the statement of the chairman of this committee—that it is the conclusion of this committee at the termination of this hearing, after the Secretary has been heard, that the delay was inexcusable, unconscionable and indefensible, and also carrying the implication that the defense of our country has thus been materially hampered, and apparently purposely so by this administration.

I say to you, Mr. Chairman, that I for one object to it. I do not think it is proper procedure, and I do not think we should play politics with our defense.

Mr. BLATNIK. I resent those charges. I resent those charges. The chief witness you are basing all of your arguments on is a distinguished and honorable man, and I cast no reflection at all on the Assistant Secretary of Defense. He testified here that this problem first

came to his attention in the latter part of October. There are some of us on this committee who knew of this problem 2 months before that time. We, too, are civilians. In the closing part of the hearing this afternoon we repeated the facts that had been repeated over a period of days during the testimony both oral and written, by the responsible Defense people in charge of these agencies.

However, we will not have public debate on that. We will have more time in the regular committee meetings. I will withdraw the statement.

Mr. SCHERER. I object to withdrawing the statement. It is in the press now. The press has got it.

Mr. SCHWENGEL. The press has it. If you had this knowledge, you had my word in the file indicating that I would be ready any time to come back to Washington to testify after the committee was formed, but our committee did not meet. Unfortunately our chairman was ill.

Mr. JONES. I cannot hear you.

Mr. SCHWENGEL. I said, we did not have a meeting of our committee. Our committee was organized immediately at the end of the last session, and we had one meeting of organization, and we were told who our counsel would be. I made myself available, and I think I made the offer to you verbally and in correspondence that I made myself available to come to Washington at any time that we should start in. So if the problem was critical, as he says it was, he must share part of the blame for the lateness of getting at the problem.

Mr. JONES. I would like to propose a unanimous consent request that all members may extend their remarks at this point in the record.

Mr. BLATNIK. The hearings for today on this subject are concluded and the meeting is adjourned.

(Whereupon, at 2:45 p.m., the hearing was adjourned.)

APPENDIXES

APPENDIX A

JULY 23, 1948.

Hon. JAMES V. FORRESTAL,
Secretary of Defense, Washington, D.C.

MY DEAR MR. SECRETARY: By direction of the Executive Committee of the American Association of State Highway Officials I am writing to you to offer the cooperation of the association in bringing about a desirable coordination of the policies of the association and its influence upon the highway construction and maintenance activities of the member State highway departments with plans for, and necessities of the national defense.

The American Association of State Highway Officials is an association of the several State highway departments and the Federal Public Roads Administration as official bodies. Through its various technical committees, it affords a most effective agency for the coordination of action by all State governments and the Public Roads Administration in matters affecting the character of highways and their usage.

As you doubtless are aware, the Federal-Aid Highway Act of 1948, approved June 29, 1948, in addition to authorizing a continuance of Federal appropriation for the several Federal-aid highway systems, specifically directed the Commissioner of Public Roads to cooperate with the State highway departments in a study of the status of improvement of the National System of Interstate Highways, designated in accordance with the provisions of section 7 of the Federal-Aid Highway Act of 1944, and to invite the cooperation and suggestions of the Secretary of Defense and National Security Resources Board as to their indicated or potential needs for improved highways for the national defense.

The State highway departments naturally desire to cooperate fully in this indicated study, results of which are to be reported by the Commissioner of Public Roads to the Congress not later than April 1, 1949. Their interest and concern, however, extends beyond this limited objective and embraces a desire to orient all their plans and constructive activity to the meeting of all highway essentials of the national defense, whatever they may be.

In the recent war, there was frequent occasion for the movement of highway loads exceeding the designed capacity of roads and bridges. Obviously this is a condition that should be avoided in any future emergency by timely planning and preparatory action. This will be accomplished only by effective liaison between the agencies responsible for the provision of highway officials and the military authorities.

It is with a view to the establishment of such desirable liaison that this letter is written. The matter has been discussed fully with the Commissioner of Public Roads and he will receive a copy of this letter.

I suggest the advisability of an early discussion of the various aspects of the problem herein outlined by appropriate representatives of our association with military and naval personnel of your designation; and on our part I shall be glad to make arrangements to meet your convenience.

For your information, advise that the date of the next meeting of the association is September 20–24, 1948, at Salt Lake City, Utah.

Sincerely,

R. H. BALDOCK, *President.*

Appendix B

Statement of Armlon Leonard, President, Leonard Bros. Transfer, Miami, Fla.

Mr. Chairman and members of the committee, my name is Armlon Leonard. I am president of Leonard Bros. Transfer which makes its headquarters at 2595 NW. 20th Street, Miami, Fla.

I am a vice president of the Heavy Specialized Carriers Conference of the American Trucking Associations. This is the national association of heavy and specialized motor carriers. In making my presentation, I am appearing before you today as a member of a special committee of the heavy specialized carriers conference.

To discuss the subject properly, I will have to mostly refer to the services and experience of my own company, which reflects similar experiences of other heavy specialized carriers in transporting overdimension equipment.

Our company is rated as one of the major motor carriers of its type in the country. Our Interstate Commerce Commission authorities permit us to operate in 41 States. Our experience goes back more than 35 years in this specialized field of motor transport hauling. My own goes back 25 years. The size and scope of our operations, I believe, qualify us as a nationwide heavy specialized carrier in helping to clarify the problems concerning the subject before this committee.

Among the overdimension objects we haul are giant missiles, such as the Atlas, the Titan, and others, as well as launching towers for these missiles. Since 1939 we have moved aircraft, aircraft parts and engines for Government military agencies and the major commercial airlines. We also move massive electric generators and transformers, some of which weigh more than 400,000 pounds, large boats, barges, dredges, roadbuilding machinery and equipment, plant machinery of all kinds and sizes, big boilers, ship propellers and naval guns, as well as classified shipments of delicate and costly overdimension electronic equipment, including telemetry towers, radar equipment, radome windows and the like.

We are proud to have the opportunity to offer and provide our specialized transportation services to the military and civilian agencies of the Government and contractors who produce this oversize equipment for the defense of our country as well as the big machines that make the machines to generate the energy to power-up America, which contribute to the economic stabilization of our country.

This brief description of our company and our industry's operation will give you a frame of reference and a feel of the scope of our activities.

As a result of our experience with these huge objects, our company has issued the only manual of its kind for our drivers to provide precise guidance to carry these giant missiles efficiently and safely to their destination. I submit as an exhibit a copy of this manual specially produced for the drivers and missile convoy crews, and another procedures manual for the supervisors of missile convoy crews. In this connection, we have had to develop special convoy techniques to move these large cargoes to insure that no possible hazard could damage or delay their safe and efficient delivery.

This explanation leads me into the subject matter before this committee. "The road hazards presently faced by motor carriers moving these large objects." Which subject might well be titled, "Are we building a Chinese wall around and throughout our country?" or "The greatest trap ever set for America—and we set it ourselves."

I can state unequivocally that the most dangerous hazard in moving large and expensive equipment is the inadequate highways with low railroad bridges and crossroad overpasses with unrealistic clearances over the highways of our land. The unrealistic vertical clearances are, and will more seriously prohibit the transporting of high machinery and especially aircraft components. Some of these overpasses date back to horse and buggy days.

As our military and economic power grows, the things we manufacture to achieve these favorable results, are getting wider, higher and longer. As a result, it would not be unreasonable to forecast that, unless our new roads and overpasses are built to handle these new overdimension objects, we will be building expensive highways and bridges which will literally and actually erect a Chinese wall—without openings—in and about our Nation, stifling the growth

of our economy and providing aid and comfort to any potential military aggressor by effectively cutting off access of military machines from the point of production or storage to their point of utilization. In the event of bombing, rescue and salvage teams and large reconstruction equipment will be blocked off from the damaged areas.

I cannot and do not believe that the officials charged with the responsibility of planning for the building of our new nationwide system of highways to take care of our traffic needs until 1975. deliberately established specifications for the new roads to preclude their maximum use for the transportation of the vitally needed new equipment and machinery now being produced. In my opinion, our country's progress in space rocketry and industrial achievement far exceeded anyone's expectations at the time the original roadbuilding program was drawn up several years ago.

If we are to achieve maximum efficiency for our military and economy, we will have to raise our sights to overcome the present situation. We cannot count on the railroads to move these objects. Like our new road program, spectacular technical progress has outraced their ability to handle these new and large integrated or one-piece commodities. I am not prejudiced as a motor carrier operator in making this statement. I make it as any observant citizen would who has watched the railroads cope with the demands of modern industry. Low and narrow tunnels with impossible curves. low overhead passes and complex switching yards makes it impractical to use the railroads for this overdimension equipment. It would be too costly to reconstruct the Nation's railroad system. The cost plus the delay could sound the death knell of the Nation if we had to wait for such reconstruction.

The same problem is almost upon us now with regard to our new highways, which are adding more and more of these low—much too low—underpasses over our highways. Soon it will be too great an expense or too great a delay for changes and reconstruction.

Well, what is the answer to this inevitable problem? Right now, in moving our convoys over existing new and old highways, we find overpasses marked 14 feet or 14½ feet. In many cases, these road markings are not correct. If we accepted these figures as gospel, it is probable that some of the missiles we now have in orbit in competition with Russian sputniks, would never have left the ground. Why? Because these road markings on overpasses, if accepted, would have betrayed us—especially carrying a long horizontal object such as a missile with a height of 13 feet 11 inches. Such cargoes have been damaged or destroyed. The pictures we will show will demonstrate this situation to you visually.

Many of these overhead structures have been damaged by collisions and have protruding pieces of metal projecting downward for the unwary carrier. In other cases, the highway beneath it has been repaved one or more times, and the distance between the highway and the vertical clearance of the overhead structure has been reduced by 2 or more inches. Packed snow, ice, or sand may add to the hazard. I realize that the question comes to you—How do they get these big things through when they are bigger than the openings? We do. And that's a miracle of human ingenuity. First, to protect our precious cargo, we send ahead a convoy escort car equipped with special height-warning antenna or gages which are the exact height of the cargo. If the clearance is a fraction off, a warning signal is given, and we are alerted not to pass through. We don't trust the mechanical devices completely. We also have a crow's nest on the missile carrier. Here, a trained operator doublechecks the warning device and clearance to be sure. If it is too low, we deflate the tires on the tractor and missile carrier, technically referred to as a "transtainer" and utilizing warning antennas on all equipment, squeeze through the opening. Then a compressor quickly pumps up the tires and we are on the way again. A reprint of a recent article explaining how we do it is attached as an exhibit.

Now, what happens next, when missiles and rockets get bigger? And I understand that such missiles are now in production and others even larger are on the drawing board. Also, what will happen when our segment of the motor transport industry is suddenly called upon for a crash program when the economics of atomic energy production are solved and atomic plants begin to mushroom all over the Nation? I recently saw a film about the problems of transportation and construction of equipment for Great Britain's first atomic plant—the Calder Hall atomic energy plant. The equipment for this plant exceeds in size and dimensions anything I have ever seen moved in the United

States. Without a solution to the problem we will be forced into the uneconomic practice of fabricating the equipment for the plant right at the site. This could be very costly indeed and should not be saddled on the overburdened public who eventually pays for these extra uneconomic maneuvers.

Recently, within a single day, we were asked to move two huge loads with large height dimensions. One is 18 feet high with a length of 50 feet. The second is 18 feet high and 45 feet long. Two additional and similar loads are under consideration. They require movement from an aircraft company in Hartford, Conn., to south Florida, central Florida, and Alabama and one from an aircraft company in Texas to Florida.

These particular inquiries illustrate the present and future problems industry, military, and civilian government agencies will face as these products get bigger and bigger.

The routing on the first request for the shipment 18 feet high and 45 feet long was originally turned down because bridges on the proposed route made it impractical because of low clearances. The response was that the item was of such importance that the shipper was willing to pay for the use of a helicopter and an operator to survey the route and even arrange to remove the tops of bridges to move the object. They are willing to ford rivers to get around low clearances or build temporary roads under low underpasses.

In the second request for the object 18 feet high and 50 feet long, we reluctantly advised the shipper to make the longest part of his haul by ocean vessel and then we would move it from the nearest port to its final destination. This roundabout routing is all right when cost is not a consideration and there is plenty of time and no concern about speed to meet emergencies so that the object can be loaded in a truck from the factory to a port, reloaded on a vessel which then makes a slow journey to the port nearest destination, and is then unloaded again and transported to the final location. But, usually our organization is called upon to provide fast transit time to met important deadlines. It is the essence of our service, and in time of military emergency, the slow water route would not be feasible. As I write these words I have been informed that the Pan-Atlantic Steamship Line which had been contacted to transport this object advised that its vessels could not handle it.

At the risk of oversimplifying this important matter, I still must say that there is only one answer to this complex question. Our new highways must be built with higher and wider overpasses if we hope to achieve new goals in the sphere of economic production, military advancement, and space exploration.

Only 2 years ago, the concept of raising clearances to 14 feet looked like a progressive step in the right direction. But it is a fairly safe assumption that within a few years we will have cause to regret that we did not anticipate our problems and raise the clearance to 17 of 18 feet. Already new road construction with its low overpasses is creating difficulty when crossing over less modern highways or even secondary roads, where we had no problems before. In other words, the new construction is actually cutting down the accessibility of older highways.

I realize these higher clearances will cost more to do than the present specifications of 14 feet. I know the taxpayer is groaning now because of the load of taxes he is presently carrying. But the cost of building these overpasses properly now will be far less expensive than having to dismantle and rebuild them a few years later to the specifications industry and the Department of Defense will have to recommend. I have recently seen the statement made that to raise the clearance from 14 to 17 feet will cost a billion dollars. This is a very low cost indeed for a Nation with an annual half a trillion dollar economy to assure its security and continued growth. Compared to the total expenditure for the new highways, the addition now of a few feet to the underpasses to assure safe clearance for many years to come would be relatively minor in comparison to the overall cost of the new roads.

In closing, I believe there should be a closer formal liaison between road planners, roadbuilders, the Department of Defense, the motor transport industry, and representatives of industry, to avoid highway problems of this type in the future.

For the record, I am submitting the following exhibits:

Exhibit A. Reports of problems created by overpasses on new highway construction, including nine photographs showing typical overpass hazards with explanatory commentary.

Exhibit B. Report excerpted from a recent bulletin of the Irregular Common Carriers Conference, covering a collision between a motor carrier and a railroad highway overpass.

Exhibit C. Map, showing the location of Atlas missile bases and projected bases.

Exhibit D. Summary reports from responding State permit offices, showing—

1. Increase in the number of overdimension permits authorizations between 1955 and 1959.
2. Increase in average height of overdimension loads, reported by responding State permit offices, comparing 1955 and 1959.
3. Increase in average weight of overdimension loads, reported by responding State permit offices, comparing 1955 and 1959.
4. Increase in average width of overdimension loads, reported by responding State permit offices, comparing 1955 and 1959.
5. Estimated increase in volume of overdimension permits issued, reported by responding State permit offices, comparing 1949 with 1959. Also estimated increase of average weight of overdimension loads, comparing 1949 and 1959.
6. Number of permits for various categories of overdimension heights of loads issued, reported by State permit offices comparing 1958 with 1959.

Exhibit A

Reports of Problems Created by Overpasses on New Highway Construction, Presented by Armlon Leonard, President, Miami, Fla.

The following citations of typical overpass clearance problems are excerpted from reports received from the Miami Transfer Co., Inc., 1090 Northwest North River Drive, Miami, Fla., and Leonard Bros. Transfer Terminals in various parts of the United States.

(1) From a letter dated January 20, 1960, from George T. Brooks, sales manager, Miami Transfer Co., Inc.:

"As one of the certificated heavy haulers of our State, we move many loads of various heights and widths. Some will exceed the height of the proposed overhead bridges on our new Federal highways now being constructed in this area.

"For example, shovels, draglines, barges, and other type machinery and equipment being used in this area by contractors now engaged in various types of work are moved by this carrier every day from one job site to another. Such movements are necessary in order for a contractor to complete the many phases of his trade. Also, when such equipment is moved, it is necessary to do so on short notice and to use the most expedient service and routes available in order to expedite the delivery of such equipment. Therefore, it is necessary that such movements have a overhead clearance of some 18 feet in height. If such height is not available either under or over the new highways, the State road department must use other roads which will permit this size when issuing permits. In some cases the routes available are longer; therefore increasing the delivery cost in dollars and delaying the delivery by hours.

"Should the construction of bridges and overhead obstructions remain at the proposed heights, we will be faced with more of the same problem that exists today in the cloverleaf on State Road 7. Before this cloverleaf was completed, heavy and bulky shipments could be moved north or south on State Road 7 without delay; now it is necessary to bypass this obstruction when possible.

"I can also refer you to the overhead bridge now being built over U.S. Highway 41, on our main highway west from Miami.

"If this bridge remains at the proposed height, it will be necessary to travel to the central part of the State to reach the west coast of Florida, which is many miles farther.

"It is believed that if the obstruction, such as proposed at this time, is permitted to continue, the movement of heavy and bulky shipments will be curtailed to a great extent."

(2) From the Leonard Bros. Transfer, Orlando terminal:

"At present time, a new intrastate highway is being constructed from Daytona, Fla., to St. Petersburg. This, when finished, will be Florida State Highway 4.

"Its route through Orlando will be the Orlando Expressway and will be elevated through the downtown section, thus creating a new 14-foot overpass on Highway 50. Also a new overpass on the south side of Orlando over Highway 441. This also will be a 14-foot clearance.

"Recent widening of Highway 441 north of Orlando created a new 14-foot railroad underpass."

(3) From the Leonard Bros. Transfer, Macon, Ga., terminal:

"The new highways built in this area have been well planned and invariably improved conditions for our type hauling. As you know, we have a 12-foot, 3-inch underpass on Broadway in Macon (Highway No. 41) and it is anticipated that the new highway coming through Macon will be entirely free of underpasses for through traffic.

"I think that you will find throughout Georgia that the reason for some of the very low underpasses (viz Statesboro, Highway 80, and Athens, Highway 29) is primarily due to resurfacing the roadbed without digging up the asphalt already thereon and thereby decreasing the clearance by increasing the surface height."

(4) From the Leonard Bros. Transfer, Los Angeles, Calif., terminal:

"As a general rule, California is very good about planning far ahead on all new highway construction. Particularly on main throughways * * * all overpasses are from 17 to 20 feet in height. There are some exceptions, however, and the attached letter is a glaring example of this.

"Alternate 101 between Long Beach and Los Angeles is part of the established route through which the Atlas travels from San Diego to Vandenburg Air Force Base—an operational base—a base that is supposed to remain in constant readiness. You can also imagine the time lost to weave a route through Los Angeles area."

See copy of letter attached:

D/LSM Weapons Transportation Office,
U.S. Air Force
Convair-Astronautics,
Convair Division of General Dynamics Corp.,
San Diego, Calif., January 13, 1960.

Attention of SBNTA (SBU).
Subject: Surface.
To: Leonard Bros. Transfer & Storage Co., Rosemead, Calif.

1. I have been advised that a pedestrian overpass has been built on Alternate 101 between Long Beach and Los Angeles with an overhead clearance of 13 feet 6 inches. This overpass will have to be detoured on any missile moves in the future.

2. It is requested that the above be taken into consideration when obtaining State highway permits; also that your convoy supervisors be advised.

S. E. Johnston, *Weapons Transportation Agent.*

(5) From the Leonard Bros. Transfer, Miami terminal:

"When we move transformers and draglines which are approximately 15 feet 3 inches high, they are loaded from the south part of the county to the north part—we use LeJeune Road, but since we have to bypass the entrance to the new airport, we have to detour—causing about an hour's delay. We are also forced to detour around the cloverleaf on State Road 9 (27th Ave.) causing delay of about 1 hour. Most of these type moves are done by the hour and the rate of $30 per hour makes it necessary to charge the customer an extra $30 more.

"All the heavy equipment destined for the Keys or Key West must be moved down on barges because the bridges on U.S. 1 are not strong enough and the best overhead clearance is only 15 feet on one bridge. For light loads, the cost of a barge from Miami to Key West is about $1,800 plus the cost of hauling to the barge, loading, unloading, and hauling to destination at Key West.

"On January 15, we were requested to move an airplane from Warren, Ohio, to Brookly Air Force Base, Mobile, Ala. This airplane is 52 feet long, 6 feet 6 inches wide and 14 feet high. It is a jet fighter which was to be repaired. Due to the low overpasses, we don't know if we can move it or not. We have quite a few calls for this type of move.

"We had a call in late December 1959, from the Baldwin-Lima-Hamilton people at Eddystone, Pa., to move a ship propeller to New Orleans which was 20 feet in

diameter. With tilting, on our special prop jig, we could get it down to about 16 feet high and 16 feet wide; but due to low bridge clearances, we were unable to move it.

"We also had a request from Eastern Airlines, Miami, to move an aircraft wing panel from Lockheed Aircraft Co., Burbank, Calif., to Miami for a disabled aircraft. The wing panel was 43 feet long, 19 feet wide. If placed in a cradle in a tilted position, it would be approximately 15 feet high. However, due to low bridge clearances, we could not move it. This item had to move to the port of Los Angeles, then via ship to San Juan, P.R., then transferred to and sent by ship to Port Everglades, Fla. From Port Everglades it went by barge to a point on the Miami River where we unloaded it from the barge and hauled it to Eastern Airlines at the Miami International Airport.

"The Florida Turnpike runs from State Road 826, north Miami, to State Road 70 at Fort Pierce, Fla. It runs for approximately 120 miles and crosses State Roads 84, 7, 441, 98, 706, 76 and 714. All have underpasses except 814 and 810 (Broward County) and 706. State Road 7 underpasses are 15 feet, as are all of the turnpike bridges.

"To move transformers or draglines from Dade County to north Broward County, or farther north, we would go north on State Road 7 (441) but we must now detour the underpass on State Road 7, by north on State Road 9 or State Road 7 to State Road 811 east and north to 814 west over top of the turnpike to State Road 7 and then north. This detour is 30 miles through heavy traffic. Estimated time delay, 2 hours."

(6) From the Leonard Bros. Transfer, San Diego Terminal:

"The San Diego area is serviced by two interstate highways, U.S. 101 and U.S. 80. After checking out these highways, and through personal experience and after receiving advice from local heavy carriers and State and city highway departments, I find two drawbacks:

"1. A railroad underpass on the southbound lane of U.S. 101, approximately 1 mile north of Oceanside, Calif., or approximately 41 miles north of San Diego County. This underpass was built in 1926 and at present is 14 feet 1 inch high. In order to bypass this underpass, a load would have to be rerouted, using Los Angeles County area as an example, almost to Riverside and then south on to 395, a distance of approximately 100 miles.

"2. A railroad underpass on U.S. 80, approximately 6 miles west of California-Arizona line. This is called the Araz underpass.

It was built in 1929 and is now 14 feet 5 inches high. In order to bypass this, a load would have to be rerouted using a point east of Yuma as an example, through Phoenix, Blythe, Indio, and Riverside, and then south on to 395 to San Diego County area, a distance of approximately 150 miles longer."

EXHIBIT B

[From a recent report appearing in a bulletin of the Irregular Common Carriers Conference]

IRREGULAR ROUTER'S PROTEST RELIEVES BRIDGE "SCALPING"

A problem which may confront irregular route carriers in other parts of the country and which proved particularly costly to at least one member of this conference was brought to the attention of our organization recently. It is the matter of low clearances on spasmodically traveled highways. The case in point was a railroad bridge over a highway that provided less than 12 feet of clearance and which "scalped" at least 13 trailers in the last year.

This bridge, located in the village of Walden, N.Y., was marked with an almost invisible sign on the bridge itself and no advance warning was provided truckdrivers on approaches to the underpass. In New York State, and probably elsewhere in the country, responsibility for marking clearances under railroad bridges rests with the railroad. The trouble in New York is that the railroad can fulfill its legal obligation with just any sign, visible at a reasonable distance or otherwise. With their competitors as the only potential victims, it cannot be expected that the railroads will meet more than the barest requirements for clearance warnings.

The last carrier victimized by the Walden bridge was Alterman Transport of Miami. Its safety director called the matter to the attention of this conference. By that time, however, the problem in Walden was well on the way to a solution, with State highway authorities assuring that adequate warning signs would be erected and a clearly marked alternate route through the town provided.

What's important, however, is that thousands of dollars of truck equipment and cargo were destroyed or damaged before the matter was called to the attention of the industry organizations which were prepared to press for elimination of the problem. Any member of this conference confronted with similar difficulties should notify us so that we may bring to bear the force of the organized industry to demand a solution.

EXHIBIT C

Estimated increase in number of overdimension permits issued by 14 States comparing 1955 with 1959

State	1955	1959	Net increase	Percent increase
1. Illinois	53,195	84,106	30,911	55.88
2. Maine	10,136	12,446	2,310	22.79
3. Minnesota	13,912	14,968	1,056	7.59
4. Nevada	1,371	6,404	5,033	367.10
5. Montana	8,643	14,350	5,707	66.03
6. Idaho	6,502	16,141	9,639	148.24
7. Michigan (1958)	63,674	96,521	32,847	51.58
8. Pennsylvania	46,180	72,854	26,674	57.76
9. Missouri	41,000	48,000	7,000	17.07
10. Virginia	7,000	14,200	7,200	102.86
11. Delaware	7,160	9,199	2,039	28.47
12. California	79,269	104,353	25,084	38.37
13. South Carolina	4,934	10,389	5,455	110.55
14. New York	32,000	46,000	14,000	43.75
Total	374,976	549,931	174,955	46.68

Number of permits issued for various categories of overdimension heights, comparison 1958 with 1959

State	1958	1959
1. Maine:		
Under 14 feet	4,460	4,430
14 to 15 feet	5,570	5,535
15 to 16 feet	111	111
Over 16 feet	1,007	995
Total	11,148	11,071
2. Illinois:		
13 feet 7 inches to 15 feet	16,468	(1)
15 feet 1 inch and over	526	----------
Total	16,994	----------
3. Delaware:		
13 to 15 feet	5,000	5,000
15 to 16 feet	5,000	5,000
16 to 17 feet	500	1,000
Above 17 feet	100	150
Total	10,600	11,150
4. Virginia:		
12 feet 6 inches to 15 feet	(1)	4,812
15 to 16 feet	(1)	658
16 to 17 feet	(1)	249
Above 17 feet	(1)	83
Total	(1)	5,802
5. Missouri:		
12 feet 6 inches to 15 feet	(1)	11,523
15 to 16 feet	(1)	132
Over 16 feet	(1)	88
Total	(1)	11,743
6. Michigan:		
13 to 15 feet	3,800	4,500
15 to 16 feet	300	350
Over 16 feet	150	200
Total	4,250	5,050
7. Montana:		
13 to 15 feet	973	1,128
15 to 16 feet	320	720
16 to 17 feet	242	310
Above 17 feet	153	51
Total	1,688	2,209
8. California:		
13 feet 6 inches to 15 feet	(1)	14,900
15 to 16 feet	(1)	8,200
Over 16 feet	(1)	5,800
9. New York:		
13 to 15 feet	(1)	10,700
15 to 16 feet	(1)	1,500
16 to 17 feet	(1)	500
Total	(1)	12,700

[1] Not available.

State	Estimated percentage increase of overdimension permits issued, comparing 1949 with 1959	Estimated percentage increase of average weight of overdimension loads, 1949 with 1959	State	Estimated percentage increase of overdimension permits issued, comparing 1949 with 1959	Estimated percentage increase of average weight of overdimen- comparing 1949 with 1959
1. Montana	100	25	6. Maine	90	(1)
2. Nevada	3,000	(1)	7. California	200	(1)
3. Missouri	25	(1)	8. South Carolina	2,360	(1)
4. Virginia	150	40	9. New York	100	(1)
5. Delaware	75	75			

[1] Figures not available.

Average weight of overdimension loads, comparison 1955 with 1959

State	Weight (pounds), 1955	Weight (pounds), 1959	Increase in pounds	Percent increase
1. Montana	76,000	94,000	18,000	23.68
2. Virginia	[1] 75,000	(2)	(2)	(2)
3. Delaware	65,000	75,000	10,000	15.38
4. Minnesota	48,000	60,000	12,000	25.00

[1] 1956.
[2] Figures not available.

Average width of loads for which overdimension permits were issued, comparison 1955 with 1959

State	Width, 1955	Width, 1959	Increase
1. Montana	9 feet	11 feet	2 feet.
2. Michigan	No figures	do	
3. Delaware	10 feet	12 feet	Same.
4. Minnesota	8 feet 1 inch to 12 feet	8 feet 1 inch to 12 feet	Do.
5. South Carolina	Over 9 feet	Over 9 feet	Do.

Average height of overdimension loads for which permits were issued, comparison 1955 with 1959

State	Height, 1955	Height, 1959	Increase
1. Minnesota	12 feet 6 inches to 14 feet	12 feet 6 inches to 14 feet	Same.
2. Delaware	13 feet	14 feet	1 foot.
3. Michigan	No figures	14½ feet	
4. Idaho	do	15 feet	
5. Montana	14 feet	15 feet 6 inches	1 foot 6 inches

APPENDIX C

EXHIBIT 34

June 30, 1949.—**The President transmitted to the Congress a report on highway needs of the national defense, including in appendix III a report of the Secretary of Defense (Mar. 11, 1949) on the same subject (H. Doc. 249, 81st Cong., 1st sess.), which stated:**

"The National Military Establishment considers a relatively small 'connected system of highways interstate in character,' constructed to the highest practical uniform design standards, essential to the national defense. Because of the time required, and cost, such a system must be planned for and constructed during peacetime."

Section 8–B–(1)–(b) reflected the highway design requirements for tracked combat vehicles—"1. Height: 150 inches" (12½ feet).

(Such a height added to the floor bed (40½ to 42 inches) of the extent M15A2 transporter used for highway transportation would give a resultant overall height of from 15 feet 10½ inches to 16 feet).

The Secretary continued that minimum uniform design standards for the Interstate System should provide—"* * * for the efficient and frequent movement of vehicles within the design limitations of the above described general purpose military vehicles (these had maximum height of 11 feet and thus presented no problem) and the infrequent movement of combat-type military vehicles."

This was the last guidance provided by Defense prior to the establishment of the Interstate Geometric Design Standards.

June 29, 1956.—President signed 1956 Highway Act which required "Standards to be adequate to accommodate the types and volumes of traffic forecast for the year 1975."

July 12, 1956.—AASHO adopted Geometric Design Standards, including the minimum 14 foot vertical clearance standard.

July 17, 1956.—Secretary of Commerce approved Geometric Design Standards (without official approval of Department of Defense).

The Army Technical Manual TM–9–2800–1, entitled "Military Vehicles (Ordnance Corps Responsibility)", dated February 1953 brought up to date on February 16, 1954, and again January 12, 1956, with additions 1 and 2, reflects that at the time the standards were adopted the following pieces of ordnance equipment were then in current inventory:

Item	Height (inches)	Total vertical dimension—loaded on M15 transporter[1] (42-inch bed)
M36, 90 mm. gun, motor carriage	125⅝	167⅝ (13 feet 10⅛ inches).
M40, 155 mm. gun, motor carriage	129¾	171¾ (14 feet 2¼ inches).
M43, 8-inch howitzer, motor carriage	129¾	171¾ (14 feet 2¼ inches).
T97, 155 mm. self-propelled gun	140	182 (15 feet ½ inch).
MK4, MK5, landing vehicle, tracked	122½	164½ (13 feet 7 inches).
M51, tank recovery vehicle	129	171 (14 feet 1½ inches).
M74, tank recovery vehicle	122⅞	164 (13 feet 6½ inches).

[1] The M15A2 transporter, a specially constructed trailer originally developed for use during World War II, has a bed the dimension of which varies (dependent on the particular vehicle) between 40½ and 42 inches. 40½ inches was used above.

Other items then in current supply in the Engineers (cranes, excavators, shovels, material processing machinery); Navy (ship propellers, radar); and the Air Force (radar, aircraft components, missiles-Atlas) would exceed the 14-foot standard when prepared for highway transportation and loaded upon the appropriate carrier.

September 1956.—A heavy specialized carrier commences study to find a route from San Diego, Calif., to Cape Canaveral, Fla., for transportation of the Atlas missile.

January 15, 1957.—Army Chief of Transportation asked services to evaluate adequacy of 14-foot vertical clearance.

February 7, 1957.—Navy reported 14-foot standard adequate.

February 14, 1957.—Chief of Staff, USAF, indicated 14-foot standard adequate—refers to Research and Development Command.

February 21, 1957.—Ordnance Weapons Command (Rock Island, Ill.) suggests problem with some equipment.

February 21, 1957.—Redstone Arsenal reported they currently have an item which exceeds limitation but promise elimination.

February 21, 1957.—Army Chief of Engineers stated standards adequate.

February 25, 1957.—Army Ballistic Missile Agency had missile, which on transporter reached a height of 13 feet 11 inches, but planned reduction of size.

April 5, 1957.—USAF Director of Transportation stated AF Research and Development Command satisfied with 14-foot standard.

May 7, 1957.—Army Chief of Transportation advised Deputy Chiefs of Staff for Logistics and Military Operations that the services found the 14-foot standard adequate.

May 23, 1957.—Army Deputy Chief of Staff for Logistics interposed no objection to the 14-foot standard.

June 7, 1957.—Army Deputy Chief of Staff, Military Operations, had no objection to the 14-foot standard.

June 11, 1957.—First Atlas missile fired from Cape Canaveral, Fla.

July 31, 1957.—Army General Staff Agencies stated no objection to the 14-foot standard. Army Chief Research and Development stated no objection to the 14-foot standard.

September 25, 1957.—Second Atlas missile fired at Cape Canaveral.

October 1, 1957.—Army Chief of Transportation notified Bureau of Public Roads that the 14-foot vertical clearance standard was "Adequate for the movement of present and anticipated equipment and materials of the Department of Defense agencies."

October 5, 1957.—U.S.S.R. launches sputnik.

October 15, 1957.—Army Chief of Transportation informed the Assistant Secretary of Defense, Supply, and Logistics, that Bureau of Public Roads had been advised of the adequacy of the 14-foot standard.

November 19–22, 1957.—AASHO Convention, Chicago—Mr. Chacey, ACOFT, expresses concern of vertical clearance standard adequacy to Mr. Siegle, BPR.

November 27, 1957.—Federal Highway Administrator acknowledges Chief of Transportation's satisfaction with 14-foot standard.

December 17, 1957.—Third Atlas missile fired at Cape Canaveral.

March 13, 1958.—Upon Mr. Chacey's request, Mr. Erickson, Chief, Bridge Division, BPR, prepared a rough estimate of the cost to increase the vertical clearance on bridges yet to be built on the interstate.

Cost to provide 16 feet: 4.1 percent of initial cost of structures at 14 feet.
Cost to provide 18 feet: 9 percent of initial cost of structures at 14 feet.

March 18, 1958.—Army Chief of Transportation requested the same military departments to reevaluate their vertical clearance requirements for future movements.

April 24, 1958.—Department of the Navy replied that "14 feet vertical clearance will be acceptable."

April 30, 1958.—USAF replied "It is recommended that consideration be given to increasing the present 14-foot clearance standards for future construction on the NSIDH to 16 feet."

May 1, 1958.—Army Chief of Ordnance transmitted the report from the Ordnance Missile Command that a clearance higher than 14 feet would be necessary and recommended that "Consideration should be given to a vertical clearance of 16 to 17 feet in order to allow for any variations in loading, that will provide for the maximum utilization of equipment."

June 23, 1958.—Mr. Chacey stated to Mr. Siegle, BPR, that he anticipated an early letter would be prepared stating conclusions of the Department of Defense which would definitely involve a greater clearance. He stated that they would be specific and would be prepared to back up the requirement as a defense need.

July 24, 1958.—Army Deputy Chief of Staff for Military Operations (DCSOPS) replied, after recognizing the long life expectancy of the system and the difficulty in establishing future dimensions of items, "This hardware should not be restricted in its rapid movement over the Nation's highways in the future because of an overly conservative vertical clearance established today. The Defense Department position should include standards which provide a reasonable leeway for future requirements. It is understood that an increased vertical clearance will not necessarily mean a large increase in construction costs provided the decision is made now."

DCSOPS recommended that, as a point of departure, 20 feet be considered.

August 2, 1958.—The ninth Atlas missile was fired.

August 28, 1958.—Mr. Chacey, ACOFT, was given Mr. Erickson's estimate of additional cost to complete the remaining structures in the NSIDH at 2-foot increments from 14 feet up to and including 24 feet.

Cost to provide 16 feet; 4.1 percent of initial cost of structures at 14 feet.
Cost to provide 18 feet: 9 percent.
Cost to provide 20 feet: 15.2 percent.
Cost to provide 22 feet: 21 percent.
Cost to provide 24 feet: 24.5 percent.

This estimate did not include 7,000 bridges about 500 of which may have been over 1,000 feet long or 42 tunnels over 500 feet.

September 29, 1958.—Mr. Erickson furnished estimate of cost for providing 20-foot vertical clearance on the structures yet to be built on the NSIDH, $591 million. This figure was based on some 24,000 separation structures such as road intersections, railroad crossings, and interchange structures, but did not include the 7,000 bridges or the 42 tunnels.

Mr. Erickson felt that considering the many large and costly bridges, tunnels and interchanges that had already been built or were under construction at 14 to 15 feet, it appeared almost impossible from an economic standpoint to provide 20 feet at that late date. He did think it possible to provide 20 feet on selected routes, if essential to the military.

October 20, 1958.—Mr. Chacey met with representatives of DCSOPS to discuss the vertical clearance problem.

November 8, 1958.—DCSOPS stated: "* * * justification appears adequate for 17 feet of clearance. It is considered that the Department of the Army's recommendation should be modified to request 17 feet clearance."

This was the official position of the Army General Staff.

December 15, 1958.—Mr. Chacey met with Dr. Wehrner von Braun who stated that dimensions of future missiles and space vehicles could not be stated specifically and advised that while he knew of no specific requirement for an increase, that any increase above the 14-foot clearance would be helpful to designers working with medium size missiles and sections of large vehicles. He stated they should be given as much clearance as was economically feasible.

January 7, 1959.—Mr. Chacey discussed the problem informally with Mr. Earl B. Smith, Director of Transportation, Communications and Petroleum Policy, Office of Assistant Secretary of Defense (Supply and Logistics) and Mr. R. L. Hicks, Office of the Secretary of Defense, Research and Engineering. Mr. Chacey produced the draft of a letter to BPR intended for COFT signature, which requested that the BPR take the necessary steps to raise the vertical clearance standard to 17 feet. It was agreed at the meeting that the position being developed was reasonable and proper and that the proposed manner in which the matter was being resolved in the Defense Department with the Bureau of Public Roads (BPR) was proper.

January 15, 1959.—Mr. Chacey met with representatives of the Air Force and the Navy, and reviewed the proposed draft letter to the BPR requesting an increase in the standard to 17 feet. The Navy representative stated that the Navy only needed 14 feet but would not object to the higher clearance. The USAF spokesman advised that 17 feet was a compromise of the AF 16-foot recommendation and that the Air Force would agree to the proposed Department of Defense position.

Neither spokesman had the authority to commit his service at that time.

January 29, 1959.—Mr. Siegle received, informally, the proposed draft letter prepared by Mr. Chacey for COFT (General Besson's) signature requesting an increase of the 14-foot standard to 17 feet.

February 6, 1959.—Mr. Erickson advised Mr. Siegle that the estimate of additional cost to construct the remaining structures on the NSIDH to standard of 17 feet would be $260 million not including the 7,000 bridges about 500 of which may have been over 1,000 feet, or the 42 tunnels and excluding about 50 percent of the urban structures for which a bypass route around an urban area would be provided.

February 11, 1959.—Mr. Erickson advised Mr. Siegle that his estimate of the cost for the 7,000 bridges and the 42 tunnels would be about $100 million, making an estimated total of $360 million additional cost to provide 17 feet on the structures remaining to be built on the NSIDH.

February 12, 1959.—Assistant Commissioner for Operations, BPR, Mr. Royster, sent a memo to Commissioner Armstrong, BPR, stating:

1. An early meeting with Federal Highway Administrator Tallamy was desired by Chief of Transportation, Maj. Gen. Frank Besson.

2. Mr. Siegle's suggestion to Mr. Chacey that a 40,000-mile primary route be provided with 17-foot clearance was turned down because future movements would require H–20–S–16 bridges.

3. The Defense Department has supported the NSIDH and it would be incongruous to develop other routes.

4. Defense doesn't understand how BPR would persuade the States to alter primary routes on a 50–50 basis. They felt additional cost should be 90–10 from the highway trust fund.

5. Since the Department of Defense has lent the Defense tag to the system they were entitled to the standards without cost to the Department of Defense.

6. With extreme pressure to advance the missile program, the Department of Defense would resist curtailment to provide funds for highway needs.

7. Erickson's estimate of $350 million would include the 7,000 bridges and 42 tunnels.

8. 17-foot vertical clearance requirement is based on sound considerations.

February 26, 1959.—Mr. Chacey informally briefed Mr. C. P. Milne, Deputy Assistant Secretary of Defense, Supply and Logistics and Earle B. Smith, Director of Transportation Policy, Office of Assistant Secretary of Defense, Supply and Logistics. Mr. Chacey presented the vertical clearance problem to them among other problems in his office. He did not seek their concurrence on what COFT was doing about it.

March 16, 1959.—Bureau of Public Roads staff met and discussed the vertical-clearance problem. An outline prepared for Mr. Royster by Mr. Siegle declared that an early meeting with Mr. Tallamy was desired by General Besson and that the BPR was "involved right now" with the adjustment of an interchange in Wyoming to accommodate the Atlas missile 15 feet 3 inches high.

March 18, 1959.—Mr. Erickson prepared a memo for Mr. Siegle which set forth an estimate (as below):

March 23, 1959.—Mr. Tallamy apprised by Mr. Royster of estimate of total cost of $875 million including—

1. Difference in cost of building future structures with 17-foot clearance in lieu of 14 feet;

2. The cost of raising and rebuilding structures already completed or underway; and

3. Raising and rebuilding structures on existing facilities incorporated in the system.

Mr. Royster also explained, by memo, that the 17-foot clearance is considered by the Department of Defense, after studying the problem for a year, to be as low as they can accept for movement of future missiles.

April 15, 1959.—Mr. Siegle in a memo to Mr. Royster stated that he had been visited by Mr. Chacey who claimed he was under pressure to obtain action and who recognized that delays in resolving the problem raise the cost of an ultimate solution. Chacey expressed anxiety for an early meeting between General Besson and the Administrator to discuss the draft of a letter submitted January 29, 1959.

May 29, 1959.—General Besson and Federal Highway Administrator Tallamy met, together with their aids, for approximately 30 to 45 minutes, to discuss the problem.

June 5, 1959.—Mr. Siegle addressed a memo to the file reviewing the May 29 meeting. He felt it unfortunate that, due to other commitments by the principals, it was necessary to "* * * condense this meeting to a point which would not allow as much discussion as would have been desirable to have brought out the better points of the military proposal."

Mr. Siegle was disappointed by the replies given by General Besson to the effect that—

1. Weight was not a problem;

2. The proposal was confined to only future bridges and high vehicles could "work around" limiting facilities already completed on the NSIDH; and

3. The diagrams of missile configurations used as illustration of the problem were not representative and only added to confusion.

Mr. Siegle had conversation with Mr. Chacey on June 2 and June 4 when they discussed the problem. Mr. Siegle produced maps which indicated where the portions of the completed work on the NSIDH were and how impractical it was to consider "working around."

Following the May 29 meeting, Major General Besson instructed Mr. Chacey, among other things, to commence a study involving the hypothetical transportation of a missile between two points to determine the feasibility of working around limiting structures. Six movements were planned and a pilot movement was made between Great Falls, Mont. and Seattle, Wash., a distance of 707 miles. The study was not completed soon enough to be a factor in later decisions, it being completed November 1959, but it did show that 735 miles

would have to be traveled and 31 locations would need revision at a cost of $156,900 before the actual movement could be made.

Mr. Chacey also developed further a map of California which emphasized the restrictive effect on movement which will result after completion of the 12,000-mile freeway system planned for that State.

June 17, 1959.—Army Chief of Transportation General Besson, addressed letters to Lt. Gen. Bernard Schriever, USAF commander, Air Research and Development Command, and Major General Medaris, commander of the Army Ordnance Missile Command, asking for their support for the proposed 17-foot clearance if they agreed to the need.

July 2, 1959.—General Medaris replied that while in sympathy with General Besson's efforts he could not state that an increased vertical clearance would have general significance to the Army program. (The responsibility for the development of the larger missiles had, by that time, been given to the USAF).

August 1, 1959.—General Schriever replied, after recognizing the trend was to smaller missiles, that the impact of development of propulsion systems in the 1-, 5-, 10-million-pound range (the Atlas develops 360,000 pounds of thrust) cannot be evaluated at this time. He said there was no clear indication whether such propulsion systems will be larger individual units or clusters of smaller units. He did state, however, that "* * * I fully concur with increasing the 14-foot limitation to 17 feet," and added that "A 17-foot clearance might benefit the Nation, especially in planning new underpass construction."

August 6, 1959.—Congressman George H. Fallon requested information from General Besson on current views of the Defense Department on the NSIDH.

August 7, 1959.—General Besson replied to Congressman Fallon and stated, in part, that due to the increased Russian offensive capability, U.S. vulnerability is growing, and this has resulted in a rapid evolution of offensive and defensive concepts. The NSIDH was considered more important than ever due to its ability to provide the uniformity demanded by needs for mobility and the flexibility of highway transportation.

August 11, 1959.—Chief of Transportation transmitted General Schriever's reply to BPR.

September 25, 1959.—Mr. Siegle addressed a memo to Mr. Royster recounting a telephone call with Mr. Chacey in which the latter expressed disappointment that the BPR had refused to approve 17-foot clearance in some States on a statewide basis. Mr. Chacey "* * * understood Mr. Tallamy was telling people that he was waiting to hear from the Department of Defense, just what the Department of Defense wanted."

Chacey asked Siegle's opinion as to the desirability of sending a letter at this time. Siegle reported that when they had made up their minds as to what they wanted and are ready to provide sound justification, they should do so.

Mr. Siegle stated he was—"* * * dismayed at his (Mr. Chacey's) despairing attitude and his inclination to place all the blame for inaction on Mr. Tallamy, and told him again that if he felt they had a strong justification for 17-foot vertical clearance they should present the story without delay. Mr. Chacey said he was confident that he could go before a congressional committee right now and explain their need."

Mr. Siegle reported that Mr. Chacey dropped by later that day to say he felt he should proceed at once to draft a letter requesting the 17-foot clearance so the problem could be presented to the AASHO convention in October.

September 30, 1959.—The letter from the Army Chief of Transportation, Major General Besson, to the BPR requesting an increase in the minimum vertical clearance standard on the NSIDH from 14 feet to 17 feet was brought to representatives of the USAF who signed their concurrence to it.

October 1, 1959.—General Besson's letter to the BPR requesting the 17-foot vertical clearance on the NSIDH was brought to representatives of the Navy; Army Deputy Chief of Staff for Military Operations; Office of the Department of Defense, Research and Engineering; and the Office of the Assistant Secretary of Defense for Supply and Logistics; all of whom signed their concurrence.

General Besson's letter, which was in essence identical to the letter prepared in January 1959, was transmitted to the BPR.

October 5, 1959.—Mr. Chacey, in a memo to the file regarding the transmittal, related that it was hoped the change in standard to 17 feet could be accomplished at the AASHO convention in Boston on October 10–16.

Mr. Chacey also related that Mr. Siegle would recommend official transmittal of the letter to Mr. Alf Johnson, AASHO executive secretary, and that because

Mr. Johnson had requested information on the Defense position on vertical clearance needs.

"I told Mr. Siegle I would informally furnish Mr. Johnson a copy of the letter but DOD (Department of Defense) had no plans for officially requesting American Association of State Highway Officials to initiate the action in this matter. It was agreed that the initiative in this proposal should come from the Federal Bureau of Public Roads to the AASHO."

Appendix D

Statement by Ralph E. Clark, Chairman, Car Service Division, Association of American Railroads

I am at present, and have been since January 1, 1959, chairman of the Car Service Division of the Association of American Railroads. The Car Service Division is an agency set up by the railroad industry to police the handling of freight cars under a set of rules known as the Car Service Rules, and to supervise the countrywide distribution of freight cars of all kinds which the railroads furnish.

My railroad experience started in 1911 with the Chicago, Burlington & Quincy Railroad, in whose employ I remained until 1922. I have been connected with the Car Service Division of the Association of American Railroads and its predecessor, the American Railway Association, since July 1923, serving as car service agent, district manager at Seattle and St. Louis, assistant to chairman at Washington, manager of the closed car section, and vice chairman until becoming chairman, January 1, 1959, as indicated.

One of the many functions of the Car Service Division dating from World War I has been liaison with the armed services in connection with troop movements and any special freight movements, this activity being handled through our military transportation section which is at present located with the Military Traffic Management Agency at Gravelly Point. We are thus, and have been for many years, in daily contact with the military as to their transportation requirements so far as the railroads are concerned.

The purpose of my testimony is to point out the railroads' ability to move oversize and heavy shipments, both for the armed services and the public generally.

So far as the military requirements are concerned, the railroads have moved the Polaris, Jupiter, and Titan missiles. A full-sized model of the Minuteman (ICBM) was moved on a railroad flatcar recently. This huge missile and its launching equipment, mounted on a 72-foot highway trailer, and weighing close to 90,000 pounds, were shipped on one of the many 85-foot piggyback flatcars the railroads have in regular service. The raising of the highway bridges from 14 to 16 feet in height will not, as far as we know, enable the highways to accommodate any important military shipments which cannot now be otherwise handled.

To take care of oversize shipments which cannot be accommodated in conventional freight cars the railroads have provided a fleet of special-type freight cars, some of which cost in excess of $100,000. At the present time the railroads own 705 of these cars, some of which will handle loads exceeding 600,000 pounds and a great many of which have depressed loading areas so that high loads can be carried closer to the ground than on conventional cars. There are several cars on which shipments can be loaded within 8 inches from the top of rail. Individual railroads, and this association, are so organized that requests for clearances on oversize shipments or of excessive weights for handling by railroads can be checked promptly and do not require the issuing of special permits as are necessary for similar shipments moving on the highways.

The military services will remember the two airplane wings, 19 feet 4 inches high, located at an Air Force installation in Oklahoma and required at Norfolk, Va. They found that it was only the railroads that could transport these wings and it was done by using an open pit well car which allowed the load to be suspended 6 inches from the rail and making the extreme height of the shipment approximately 19 feet 10 inches. As specific examples of the more routine loads, the railroads have transported recently in regular train service a transformer for the Tennessee Valley Authority that weighed 310,000 pounds and when loaded

on a railroad car was 17 feet from the top of the rail. This shipment moved from a point in Tennessee to a point in Alabama. A rolling mill machine, weighing 306,000 pounds, when loaded was 17 feet 1 inch from the top of the rail. This shipment moved from the industrial area of Ohio to the State of Alabama.

Shipments of excessive concentrated weight are also a routine job for the railroads, and several recent shipments were: (1) A large turbine weighing 610,000 pounds from a point in New York State to a point in the State of New Jersey; (2) a transformer weighing 510,000 pounds from a point in Ohio to Sharon, Pa.; (3) an air heater vessel weighing 510,000 pounds from Ohio to California.

But I believe that when any consideration is given to the movement of military items it should be pointed out just what the Department of Defense has done to insure that their traffic in shipments of excessive weight and height has been, and will continue to be, adequately handled by the railroads of this country. When the Army went into the production of the larger and heavier tanks it was recognized that the railroad-owned fleet of heavy capacity flatcars capable of transporting these tanks would not be large enough to protect all of these military requirements as promptly as they deemed necessary. The Army then built and placed in service a fleet of 743 flatcars which were built specifically for the movement of tanks which, in some cases, weigh up to 100,000 pounds. These cars were also designed not only for the handling of shipments of concentrated weight but were constructed with a platform width and height that facilitated loading and unloading. These cars have the capacity to transport two of these tractor tanks or similar items weighing up to 100,000 pounds each and which have a platform width of 12 feet. Later the Army built and placed in service another 150 flatcars with a carrying capacity of 160,000 pounds and these cars were built primarily for the movement of individual tanks weighing in excess of 110,000 pounds.

The Navy also owns and is operating over the railroads today 18 specially equipped railroad cars which have been designed for the handling of certain types of gun mounts and gun directors.

Several years ago, when the Air Force started planning for the construction of heavy extrusion presses in this country, it was developed that many of the component parts were of such size and weight that they could be transported only by rail and that there was a limited number of cars in the railroad-owned fleet capable of meeting such requirements. The Air Force then designed and built 18 heavy capacity flatcars, 10 of which were the depressed center type with a loading platform of 30 feet and a loading capacity of 330,000 pounds, and the other 8 cars were of the straight platform type with a carrying capacity of 395,000 pounds. After extensive use during the construction of these presses the cars were then assigned to the movement of any type of defense shipments requiring such equipment and are today being used in the movement of such military shipments as transformers, large gun barrels, and reactors.

Today all of these Government-owned cars are in active service operating under the supervision of the Military Traffic Management Agency—a fleet of 929 such type cars built by the Department of Defense to transport over the railroads those military items that come under the category of excessive weight and dimensions. With this combined fleet of railroad-owned and Government-owned cars, there is the capability to move by railroad practically every item of military traffic.

The Government has invested in this special railroad freight car equipment a tremendous amount of money and their fleet is being maintained in excellent condition, so that every car is available for active service. Now, may I stress the fact that these cars owned by the Department of Defense are not being furnished to the railroads to augment their regular freight car fleet, as a donation from the Government. These cars are being operated in the same manner as all other private cars and the Government is being compensated on a mileage basis by each railroad over which the individual cars move and at the identical rate paid other private car owners. The extent to which the taxpayers of this country will recover the expenditures authorized for the construction of these cars will depend entirely on the use to which they are applied for the movement of military and other defense-connected traffic.

To sum up, we have in being a fleet of 1,634 freight cars constructed especially by the Department of Defense and the railroad industry to handle, by rail,

shipments which are too large in size or too heavy in weight to be handled in conventional railroad cars. Estimating conservatively that the average cost of these cars was $20,000, this represents an investment of over $33 million, divided roughly half of Federal funds and half of railroad funds.

The railroads will in the future, as in the past, continue to be the backbone of the transportation industry.

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